

Institute of Terrestrial Ecology
(Natural Environment Research Council)

I.T.E. Project 398:
Upland Land Use - A Desk Study

THE UPLANDS OF ENGLAND AND WALES
- LAND CHARACTERISTICS AND CLASSIFICATION

2
D. F. Ball and W. M. Williams

Institute of Terrestrial Ecology,
Bangor Research Station,
Penrhos Road,
Bangor,
Gwynedd.

January, 1977.

This Report is an official document prepared under contract between the Department of the Environment and the National Environment Research Council. It should not be quoted without permission from both the Institute of Terrestrial Ecology and the Department of the Environment.

THE UPLANDS OF ENGLAND AND WALES

- LAND CHARACTERISTICS AND CLASSIFICATION - 2

(Text Figures and Tables)

D. F. BALL and W. M. WILLIAMS

FIGURES

1	Upland 100 km ² grid squares
2	Upland Regions
3	Upland Core Regions
4	Upland areas of National Parks
5	Major Watersheds
6-15	Computer Maps of single property distributions
16-19	Graphs of Core Region characteristics
20	Key Factors for natural environmental classification
21-23	Distribution of classes in natural environmental classification
24-27	Graphs of natural environmental class characteristics
28	Key Factors for natural and cultural environmental classification
29-31	Distribution of classes in natural and cultural environmental classification
32-35	Graphs of natural and cultural environmental class characteristics
36	Natural environmental classes of the regional and district study areas
37	Natural environmental classes of the National Parks

TABLES

1	Attributes recorded for upland characterisation (full details in Appendix volume)
2	Land >800 ft. in the counties of England and Wales
3	Key to upland region numbering
4	Boundary criteria for upland regions
5	Grid square allocation to upland regions
6	Grid square allocation to core regions
7	Grid square allocation to National Parks
8-13	Properties of upland regions and core regions
14	Attributes used for Indicator Species Analysis classifications
15	Summary of key factors for natural environmental classification (ISA 4)
16	Class names for ISA 4 classes
17-21	Properties of ISA 4 classes
22	General character of ISA 4 classes
23	Summary of key factors for natural and cultural environmental classification (ISA 1)
24	Class names for ISA 1 classes
25-29	Properties of ISA 1 classes
30	General character of ISA 1 classes
31	Relationship of national classification classes to core regions

[illegible][illegible]

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

2. The second part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

3. The third part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

4. The fourth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

5. The fifth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

6. The sixth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

7. The seventh part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

8. The eighth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

9. The ninth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

10. The tenth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

[illegible]

Fig. 1. Distribution of Upland 100 km² Grid Squares in England and Wales

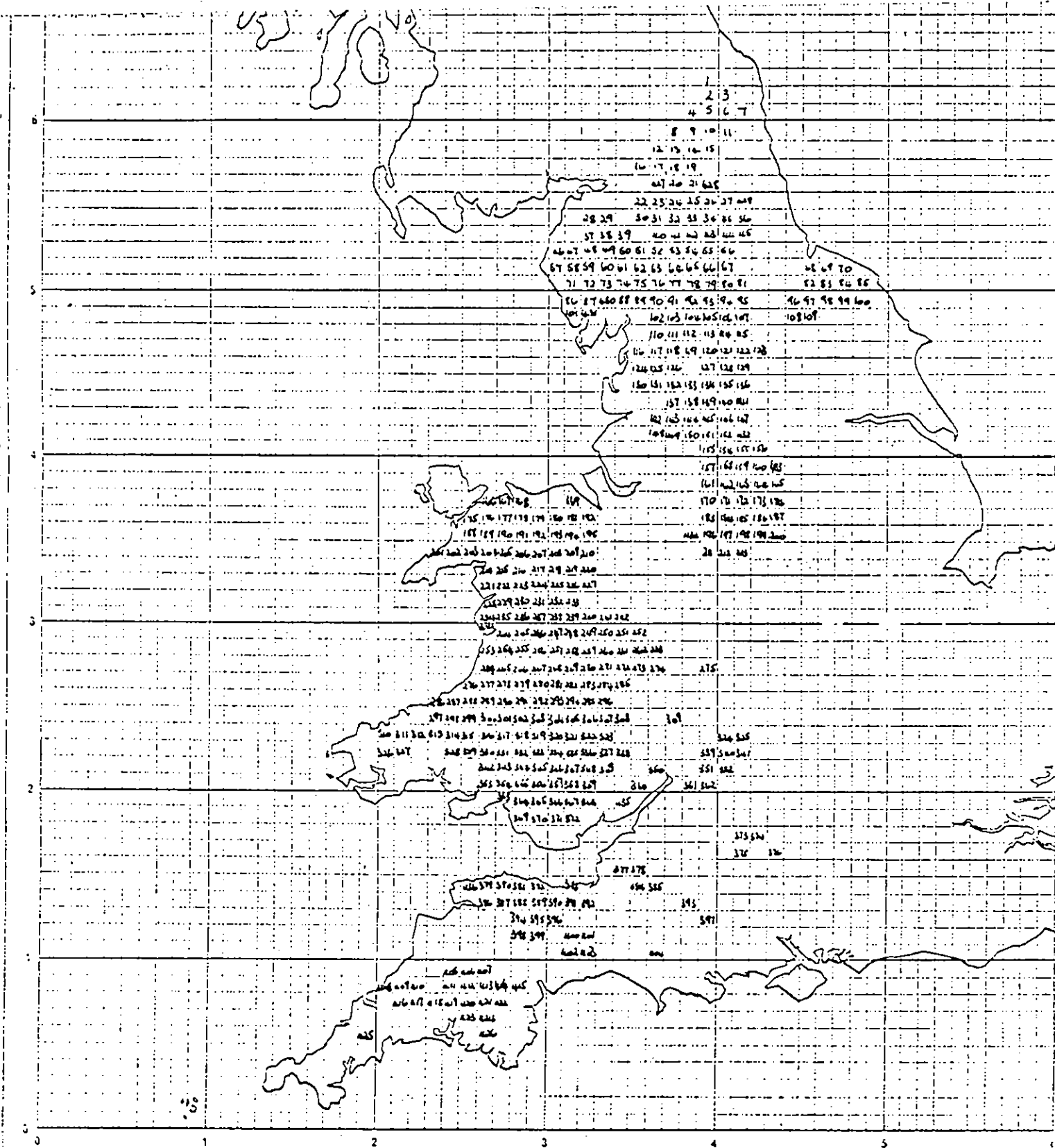


Fig. 2. Upland Regions of England and Wales

See Table 3 for Key to Numbering of Regions

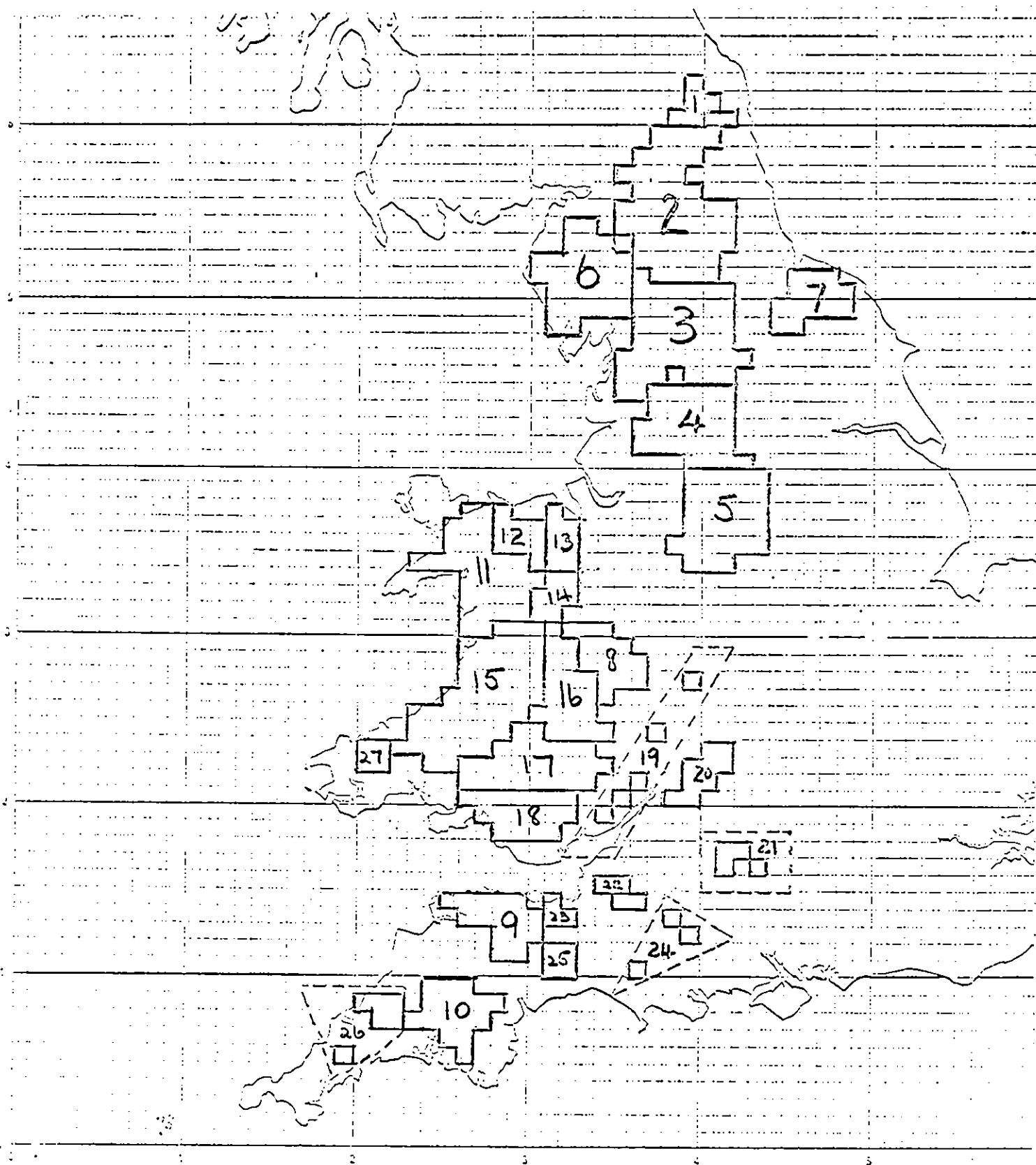


Fig. 3. Core Areas of Upland Regions of England and Wales

See Table 3 for Key to Numbering of Regions

- Grid squares with more than 50% land over 800 ft. O.D. not allocated to major upland region core areas

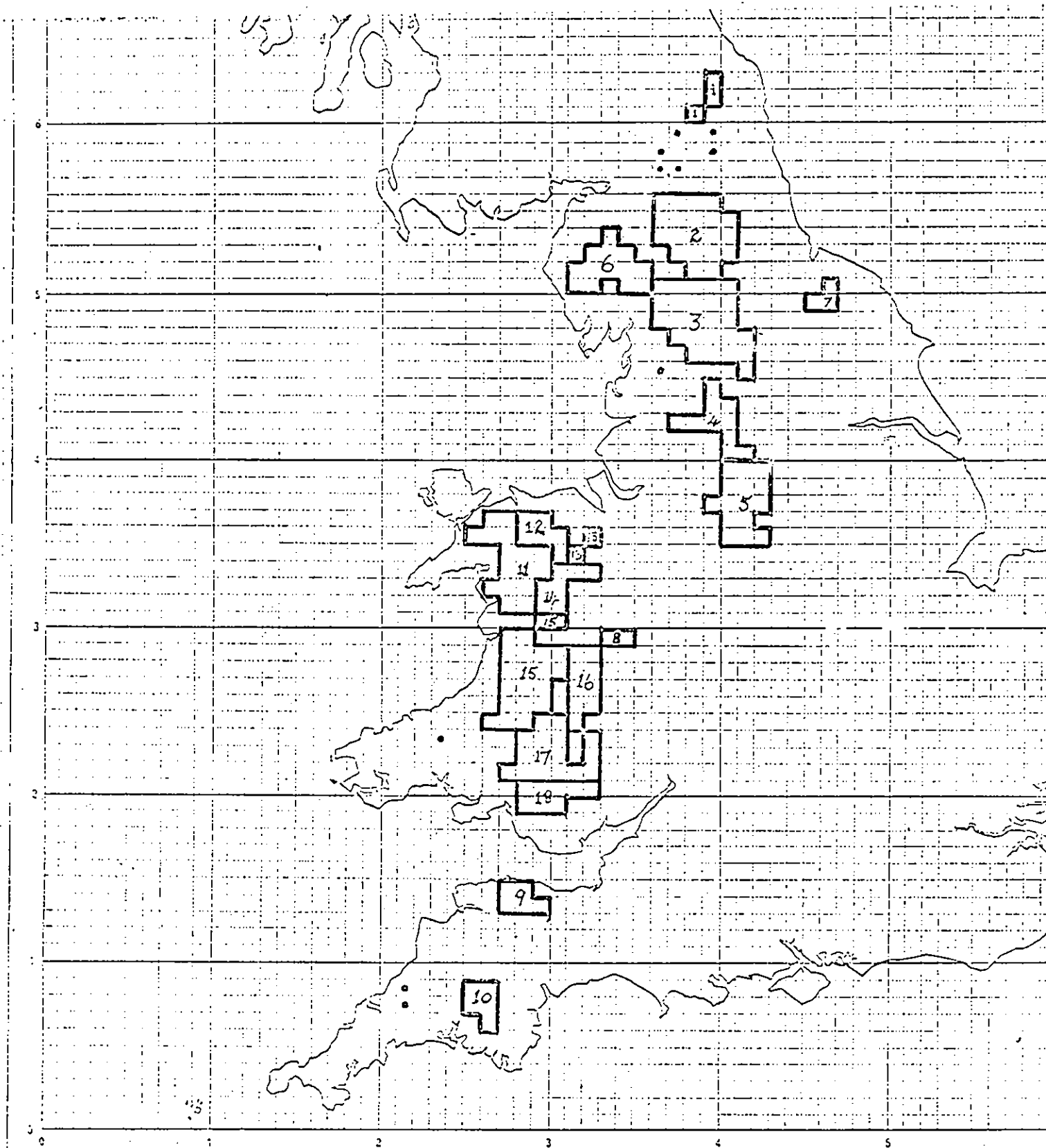


Fig. 4. Location of National Parks in the Upland of England and Wales

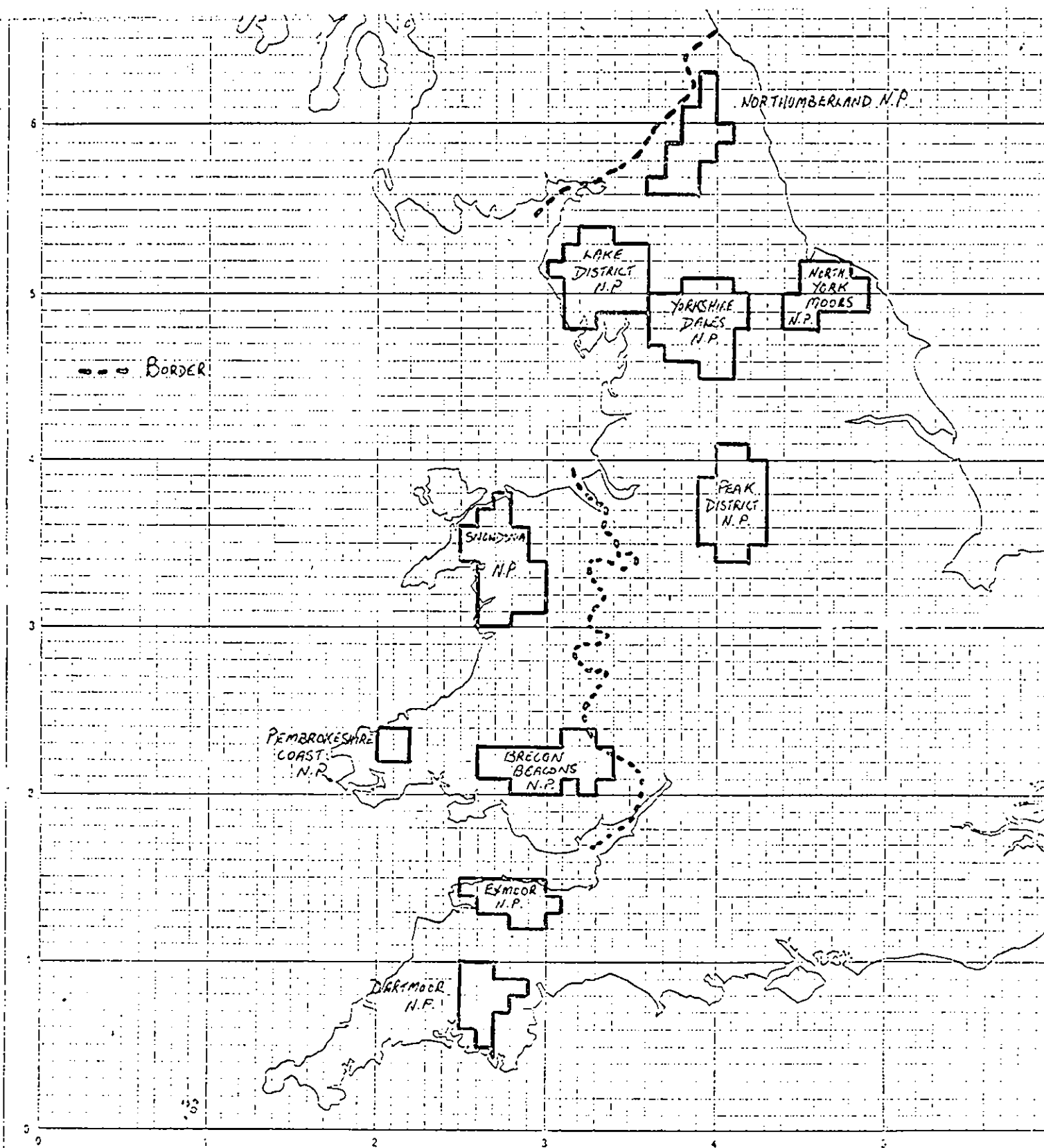
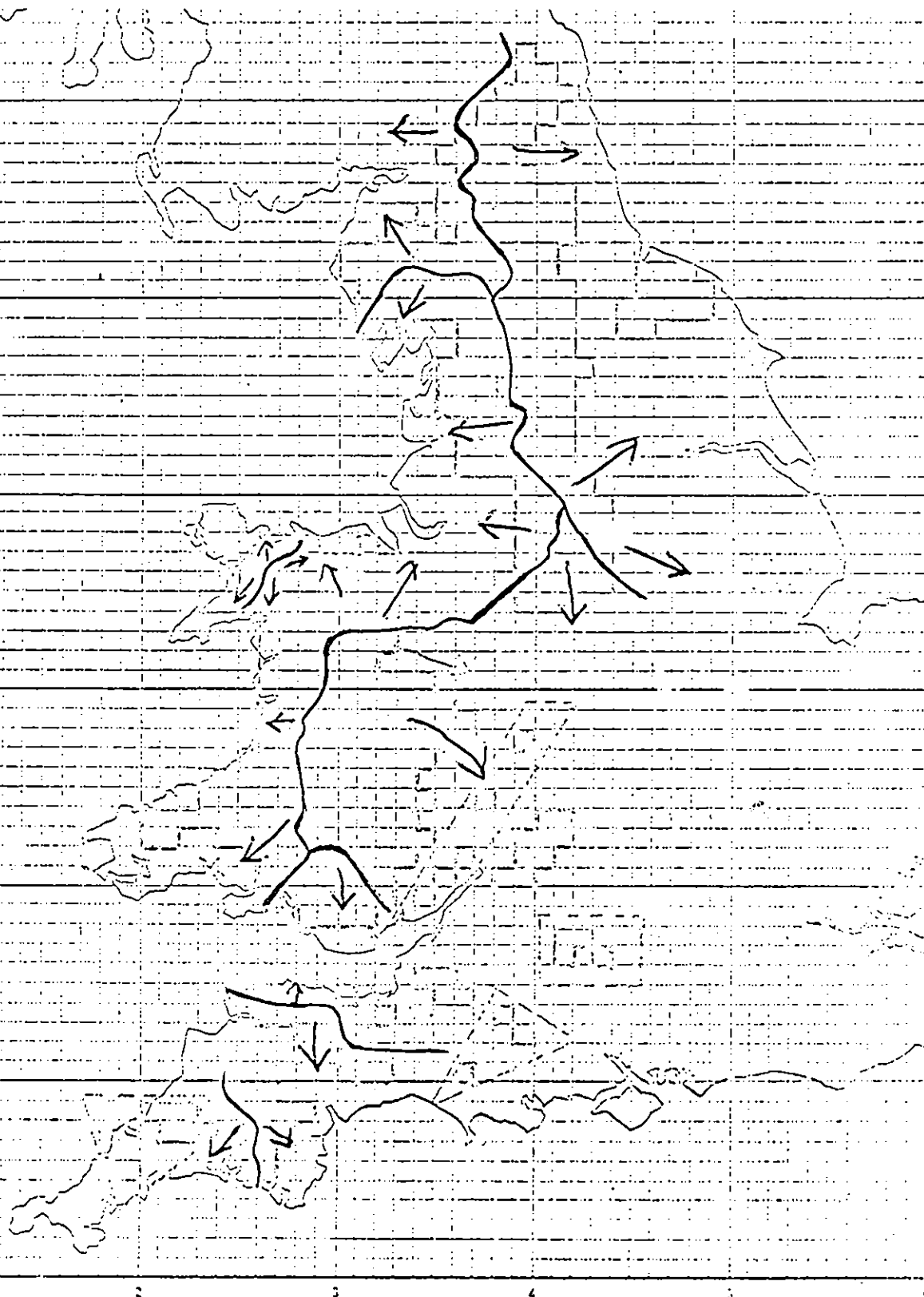


Fig. 5. Major Watersheds of England and Wales



600 -

Figure 6.

500 -

Upland Grid Squares
with >50% of Their
Area >800 ft.

400 -

300 -

200 -

100 -

SQUARES WITH $\geq 52\%$ LAND >800 FT.
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARES

200

300

400

500

600 -

500 -

Figure 7.

Upland Grid Squares
with Altitude Range
>2,000 ft.

400 -

300 -

200 -

100 -

0 ALTITUDE RANGE >=2001 FT.
0 SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARES

500 -

500 -

Figure 8.

Upland Grid Squares
with >70% of Their
Area in High Annual
Rainfall Classes

400 -

300 -

200 -

100 -

SQUARES WITH >=72 % RAINFALL 1525 TO 5079 MM
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

200

300

400

500

600 -

500 -

Figure 9.

Upland Grid Squares
with >70% of Their
Area in High Annual
Accumulated Temperature
Classes

400 -

300 -

200 -

100 -

SQUARES WITH >=70% ACCUMULATED TEMP. >= 1375 DAY DEGREES C
0 SAMPLED BUT NOT REQUESTED FEATURE

600 -

500 -

Figure 10.

Upland Grid Squares
with >70% of Their
Area Dominated by
Brown Earths and
Associated Non-Peaty
Soils

400 -

300 -

200 -

100 -

SQUARES WITH >= 70% BROWN EARTHS, RENDEZINAS & CALC. SOILS
GLEYS OR BROWN PODZOLIC SOILS
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

500 -

500 -

400 -

300 -

200 -

100 -

Figure 11.

Upland Grid Squares
with >50% of Their
Area Dominated by
Podzols, Peaty Podzols,
Peaty Gleys and
Peaty Soils

SQUARES WITH >= 50% PODZOLS, STAGNOPODZOLS, STAGNOHUMIC GLEYS
OR PEATS
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

500 -

300 -

Figure 12.

Upland Grid Squares
with High Density
(≥10) of Road
Intersections With
2 Cross-Transects

400 -

200 -

200 -

100 -

SQUARES WITH 10 OR MORE INTERSECTIONS OF ROADS
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

500 -

500 -

Figure 13.

Upland Grid Squares
with >50% of Their
Agricultural Land
Area under Improved
Grassland

400 -

300 -

200 -

100 -

SQUARES WITH >= 50% IMPROVED GRASSLAND
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

300 -

300 -

Figure 14.

Upland Grid Squares
with Low Density
(≤ 24) of Livestock
Units per 100 Acres
of Agricultural Land

400 -

300 -

200 -

100 -

SQUARES WITH ≤ 24 LIVESTOCK UNITS
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

600 -

500 -

Figure 15.

Upland Grid Squares
with >48% of Their
Area Classified as
Grades 1, 2, 3 or 4
Agricultural Land

400 -

300 -

200 -

100 -

SQUARES WITH >= 48 % GRADES 1,2,3 OR 4 LAND
O SAMPLED BUT NOT REQUESTED FEATURE
UNSAMPLED SQUARE

Figure 16. Altitude Class Distribution in Major Upland Regions and Core Regions.

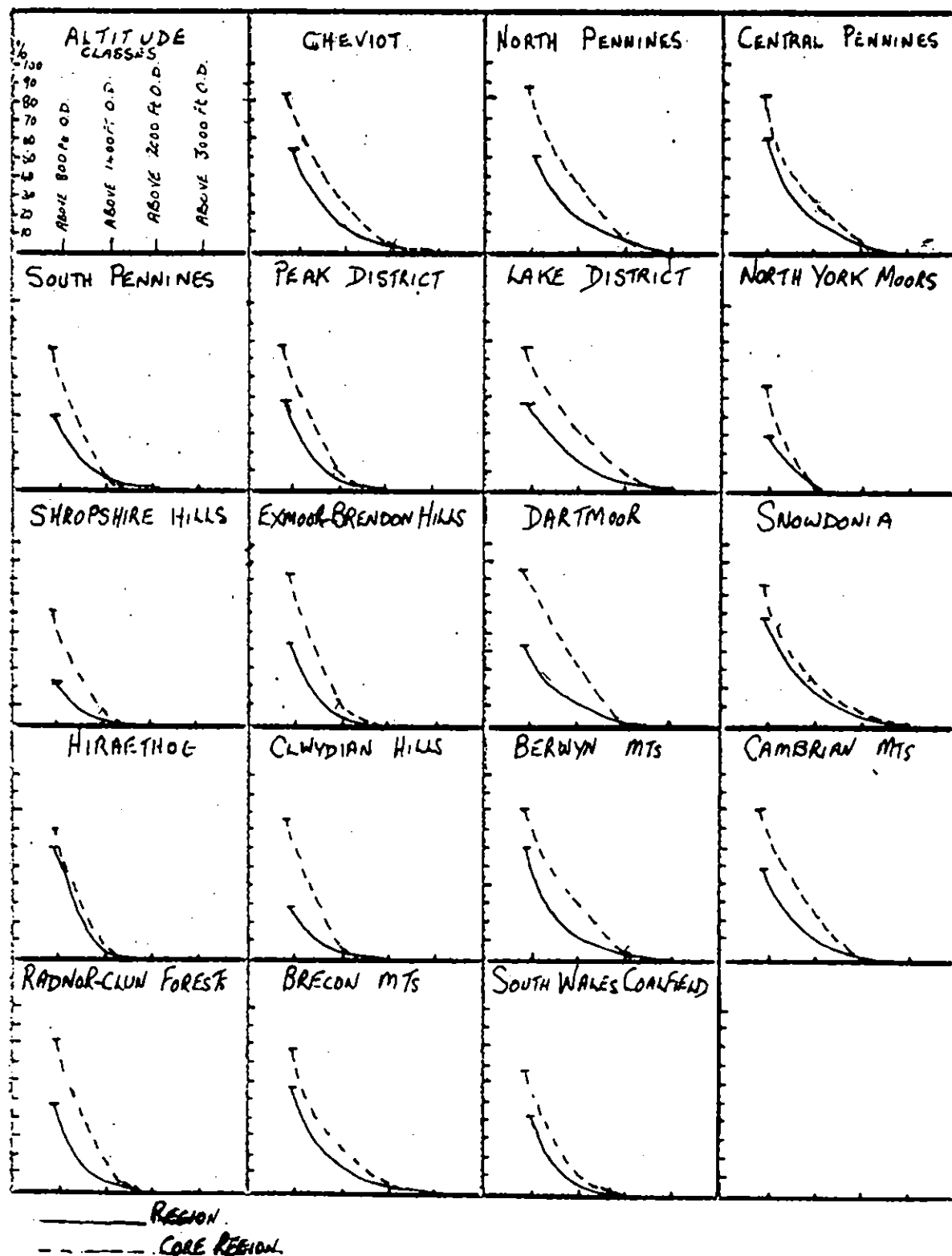
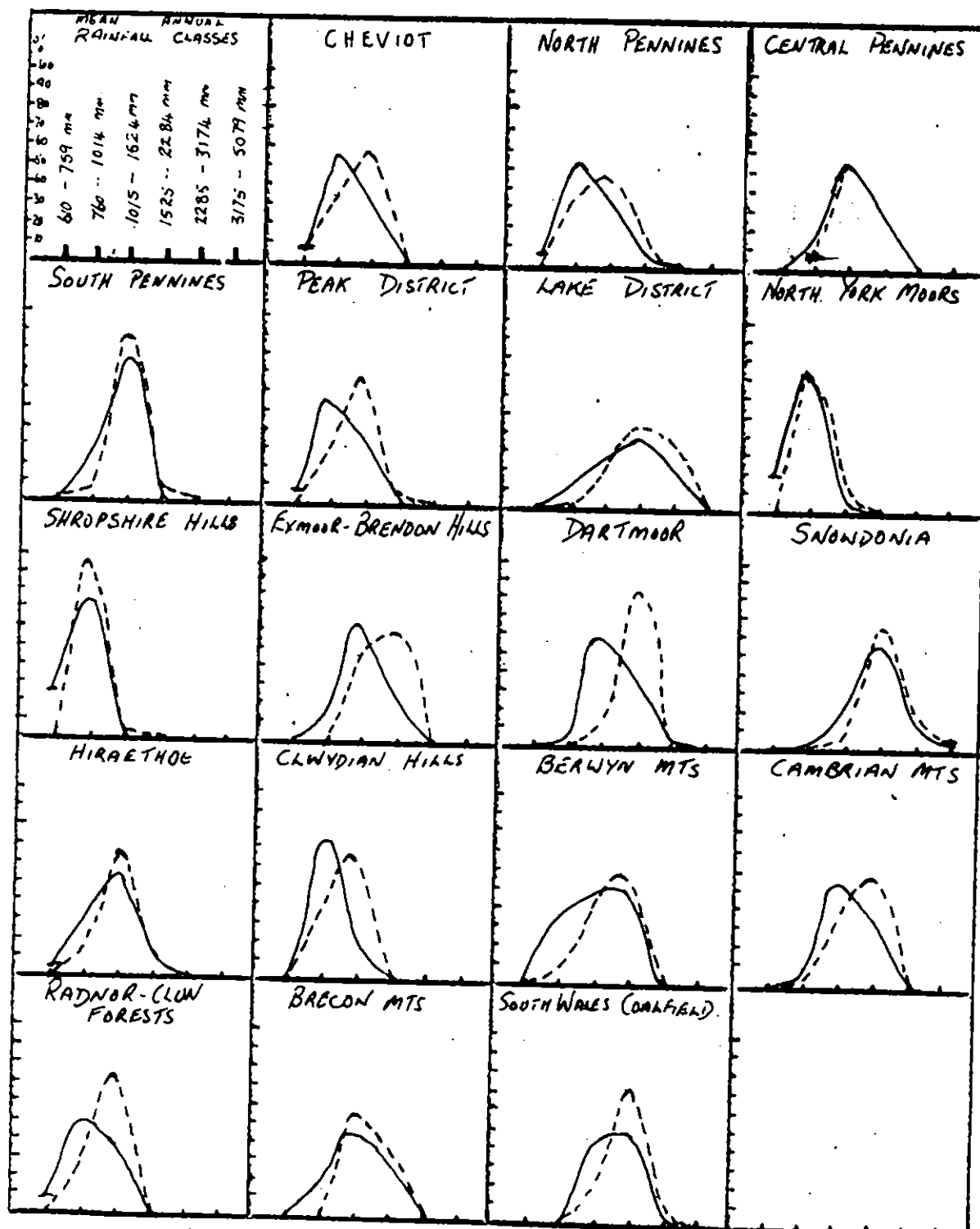


Figure 17. Rainfall Class Distribution in Major Upland Regions and Core Regions



—— REGION
 ---- CORE REGION

Figure 18. Dominant Soil Group Distribution in Major Upland Regions and Core Regions

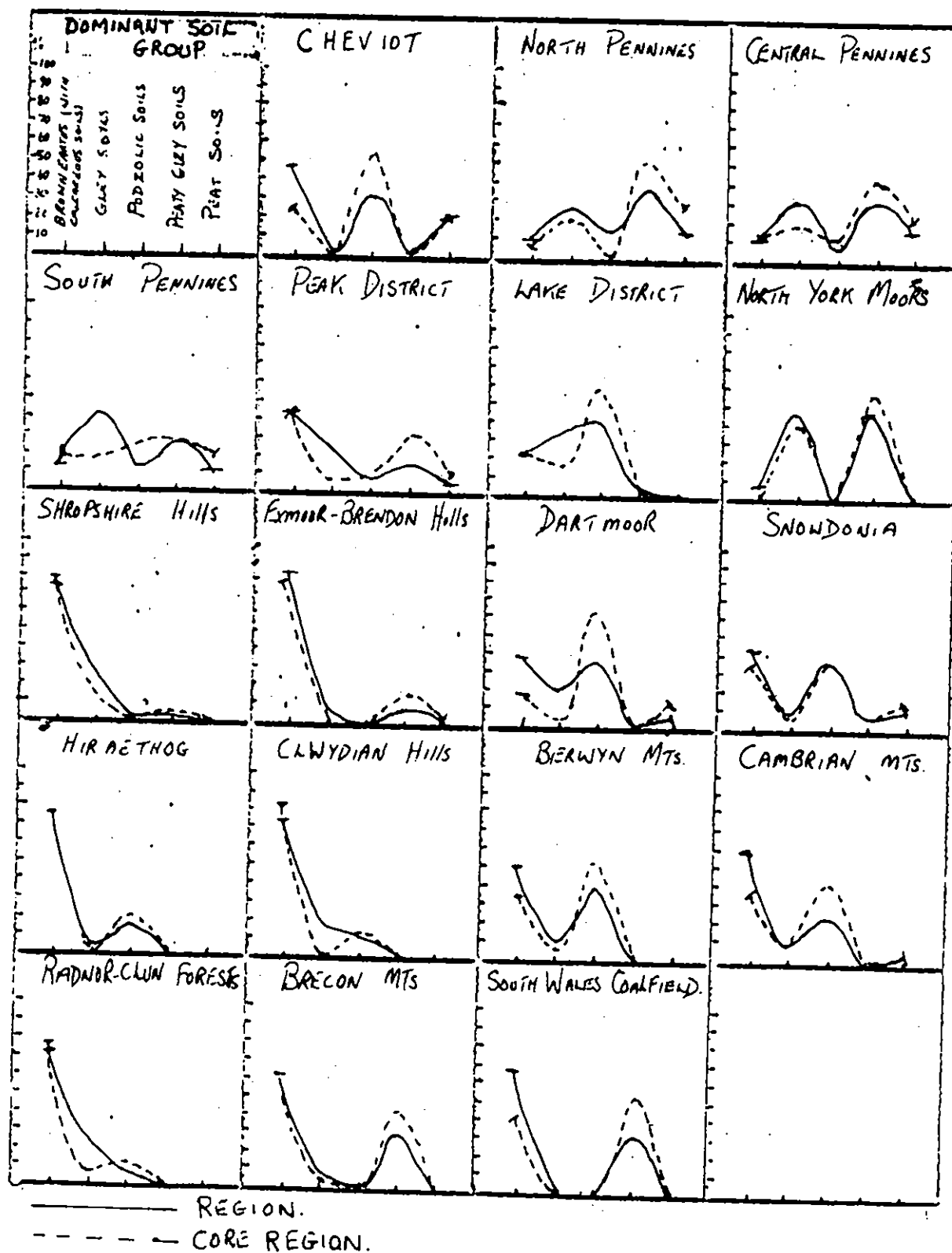


Figure 19. Agricultural Land Use in Major Upland Regions and Core Regions

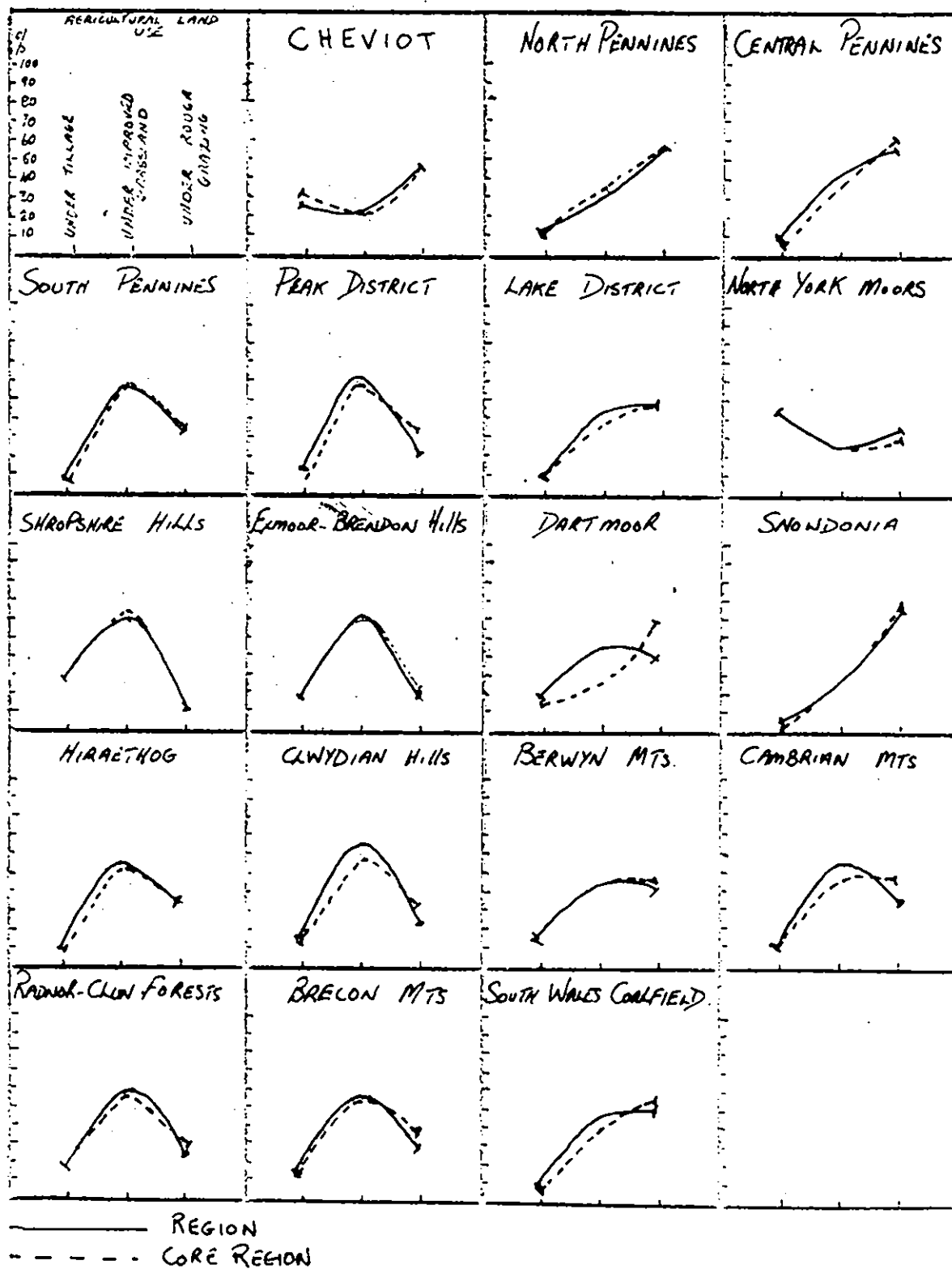
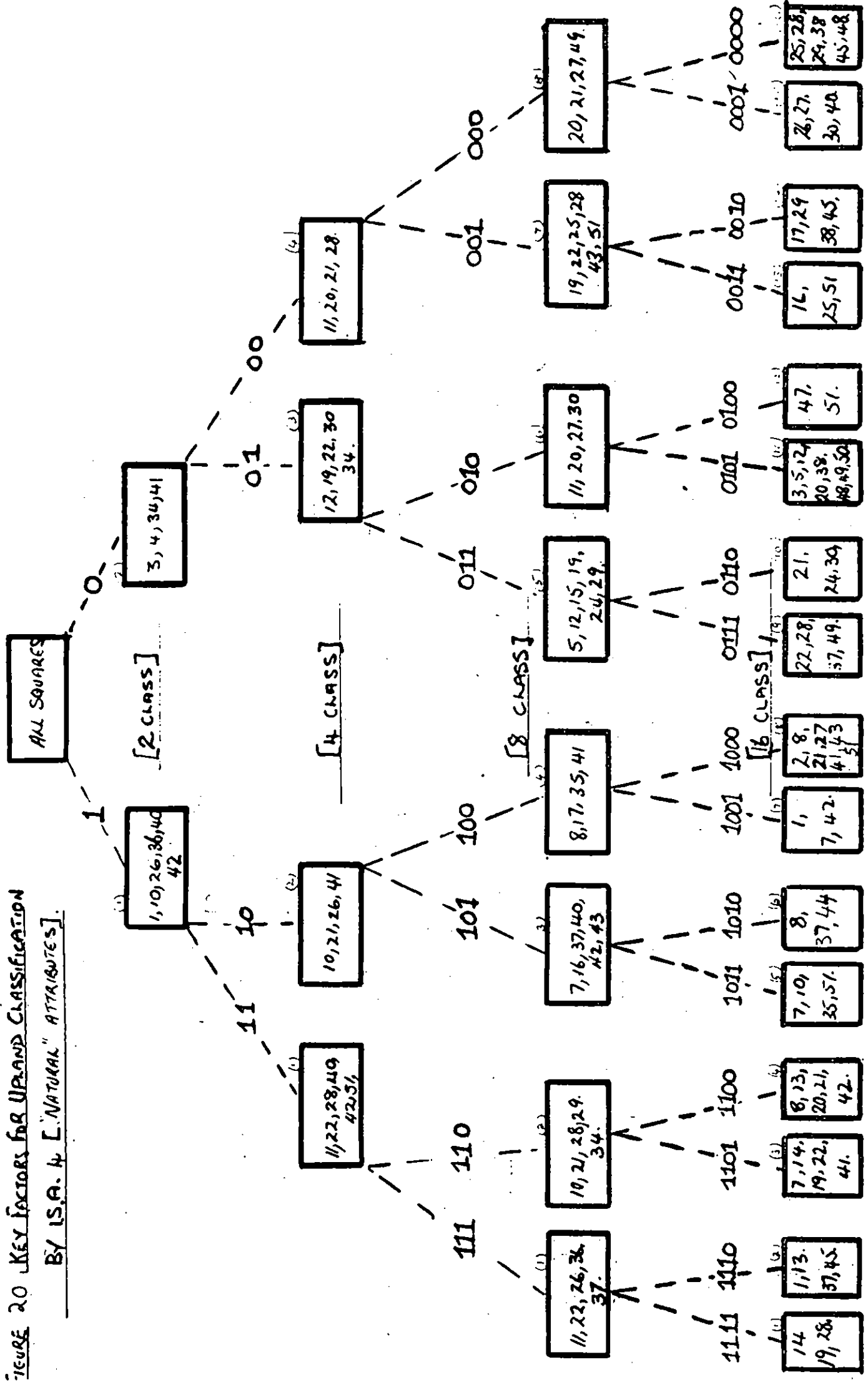


FIGURE 20 KEY FACTORS FOR UPWARD CLASSIFICATION
BY I.S.A. 4 ["NATURAL" ATTRIBUTES].



I.S.A. 4 - 2 CLASS

CLASS INDEX

1

CLASS INDEX

0

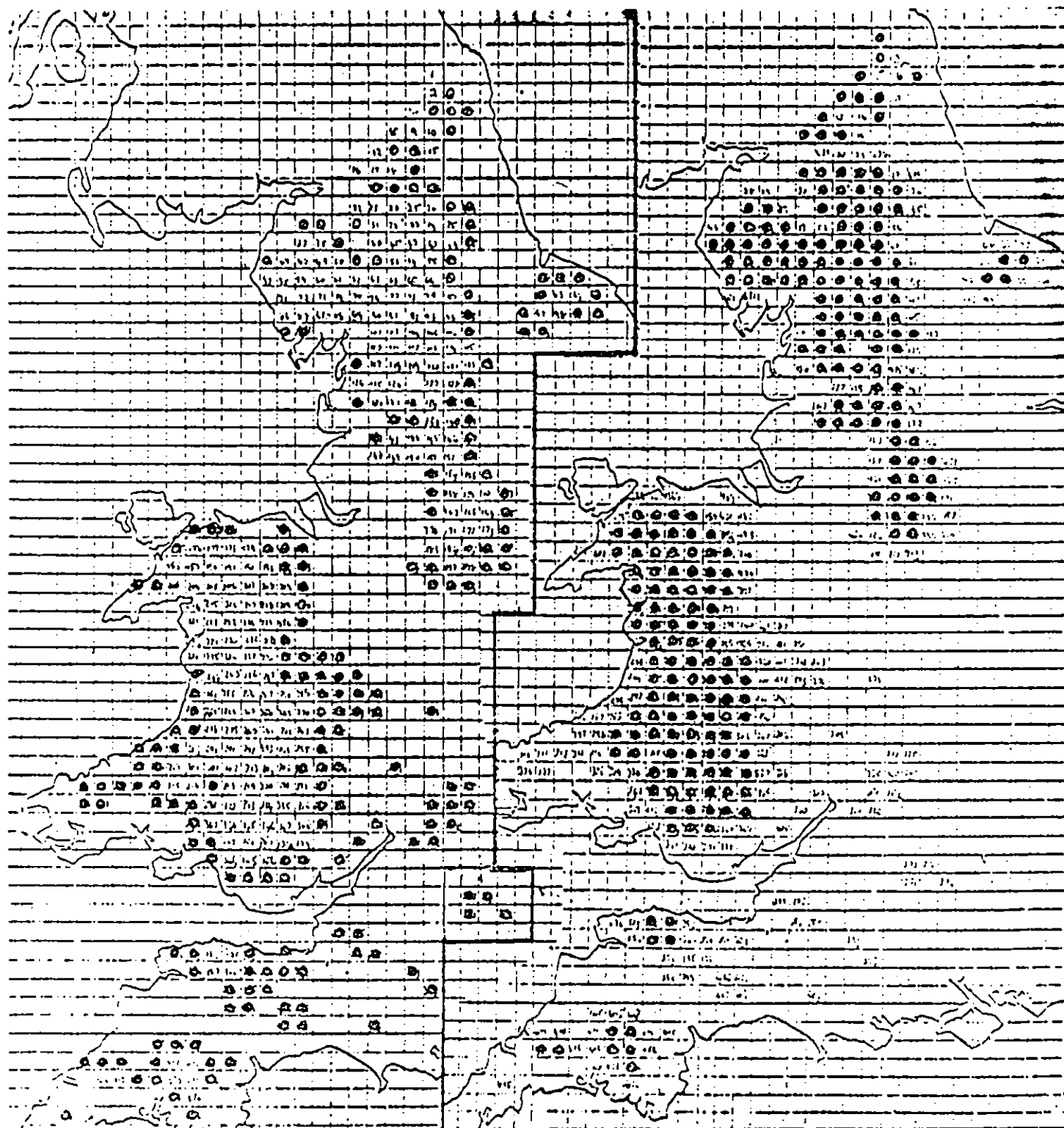


FIG. 22(a) NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 4 - 4 CLASS.

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(1)

11

(2)

10

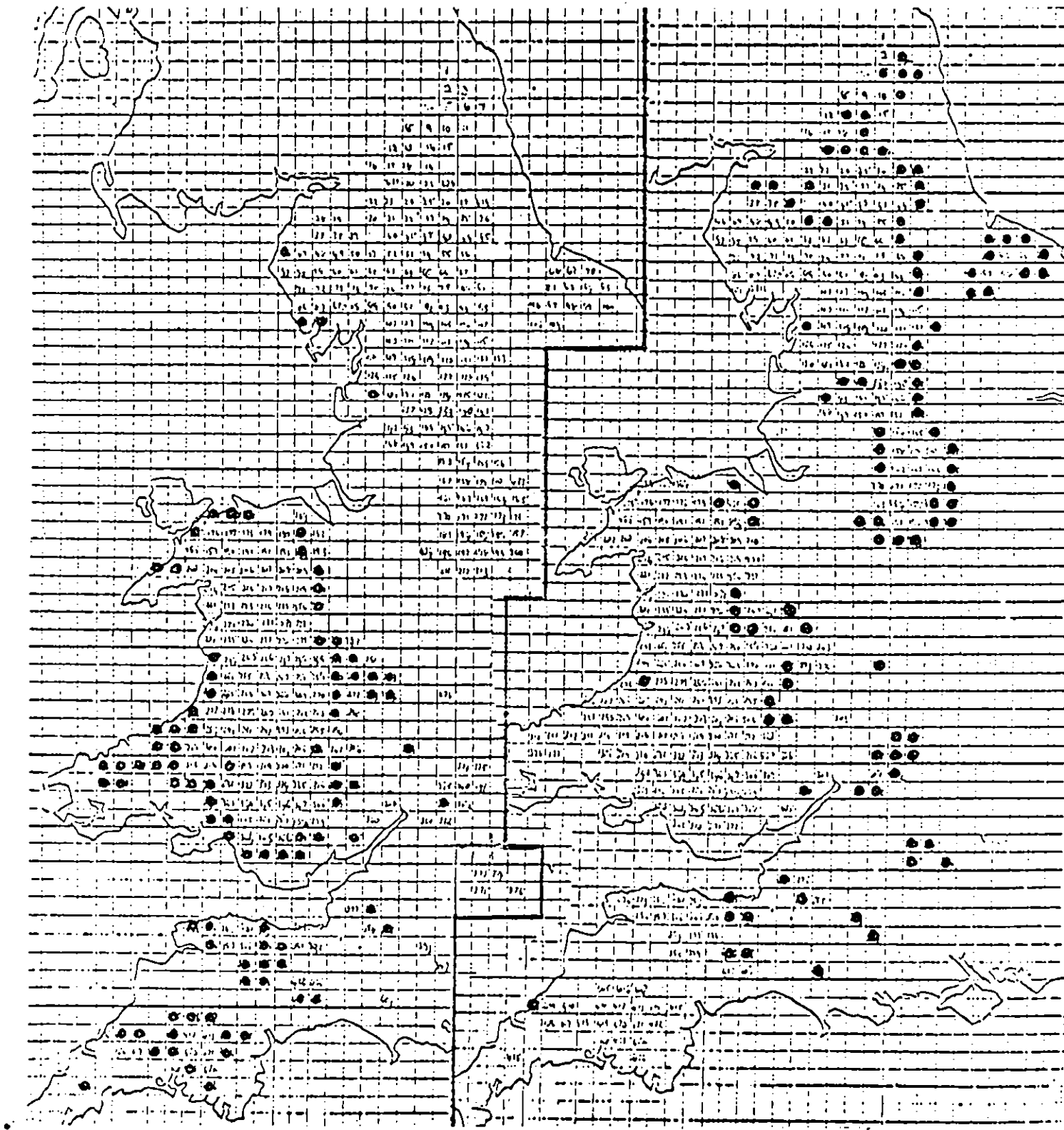


FIG 22 (b) NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A 4 - 4 CLASS.

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(3)

01

(4)

00

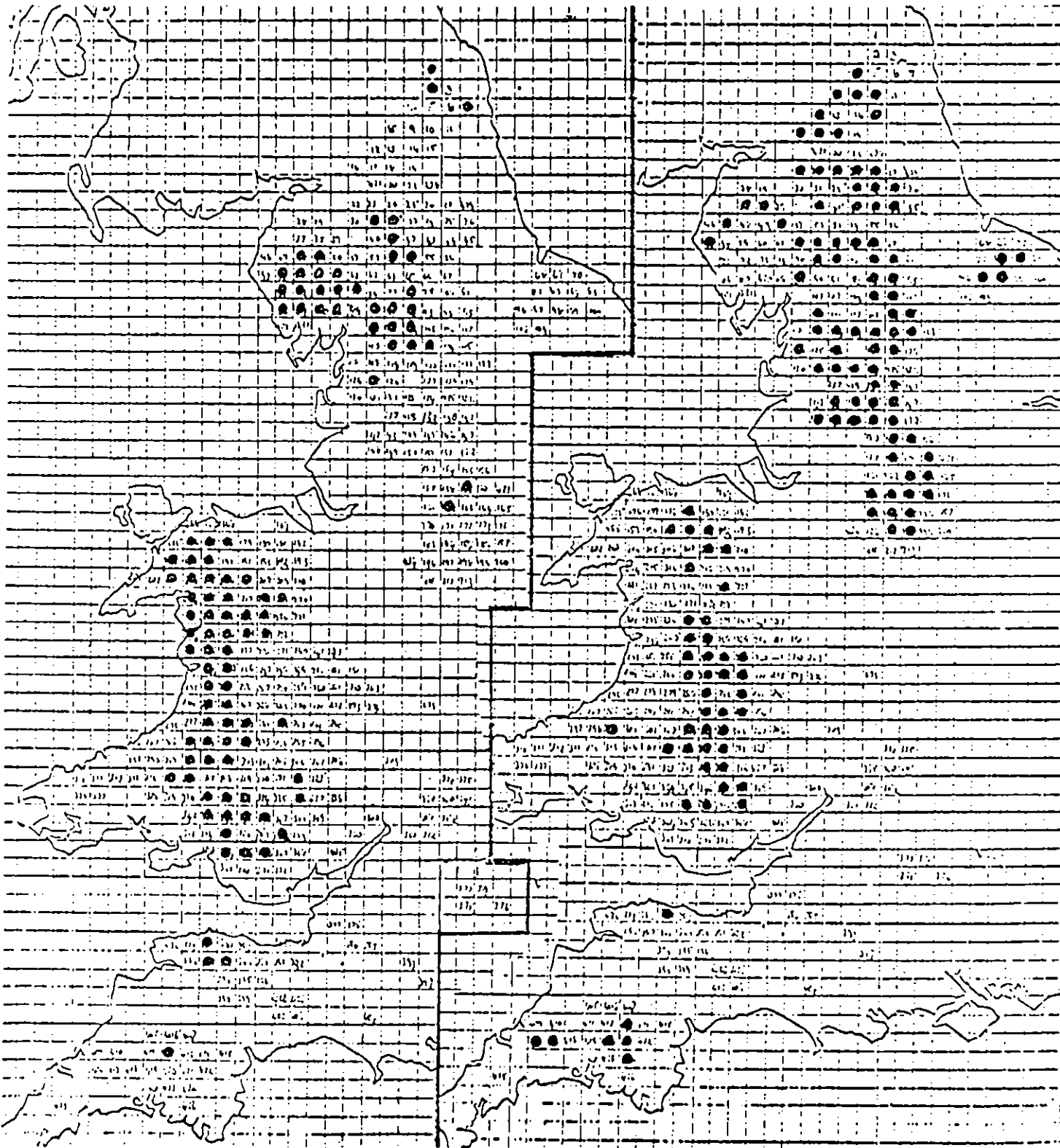


FIG 23 (a) NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A 4 - 8 CLASS

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(1)

111

(2)

110

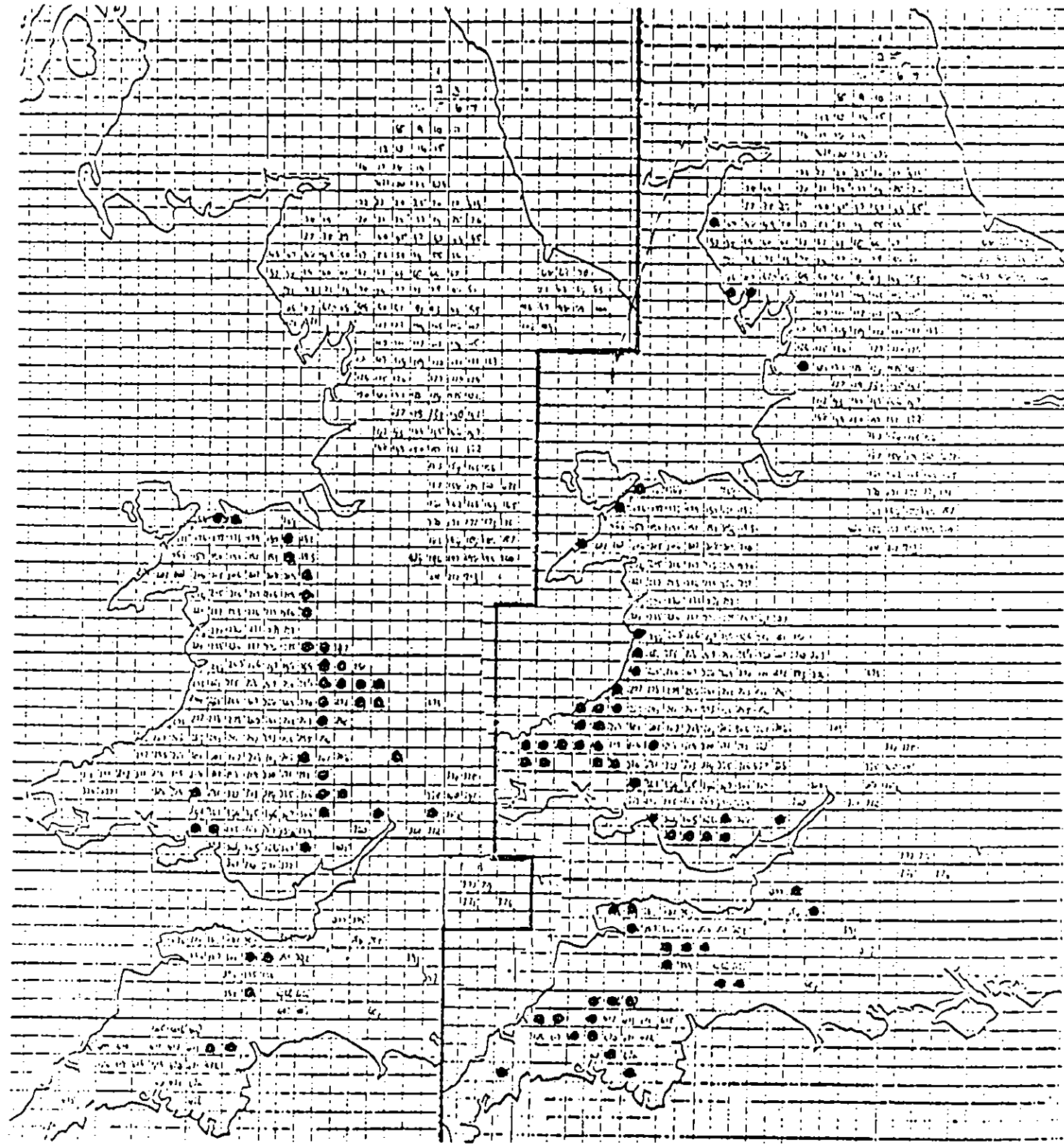


FIG 23 (b) NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A.4 - 8 CLASS

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(3)

101

(4)

100

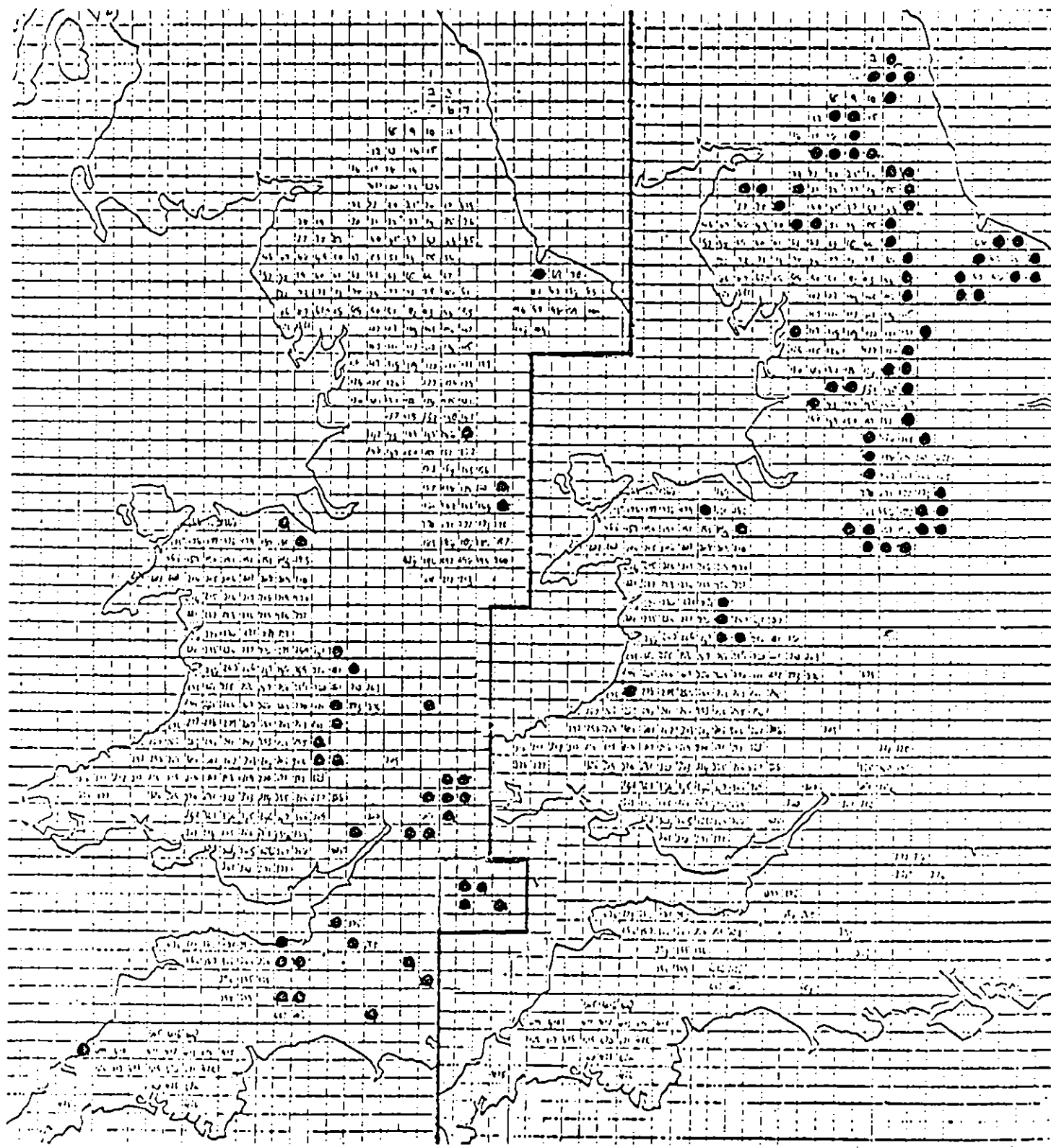


FIG 23 (C) NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 4 - 8 CLASS.

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(5)

011

(6)

010

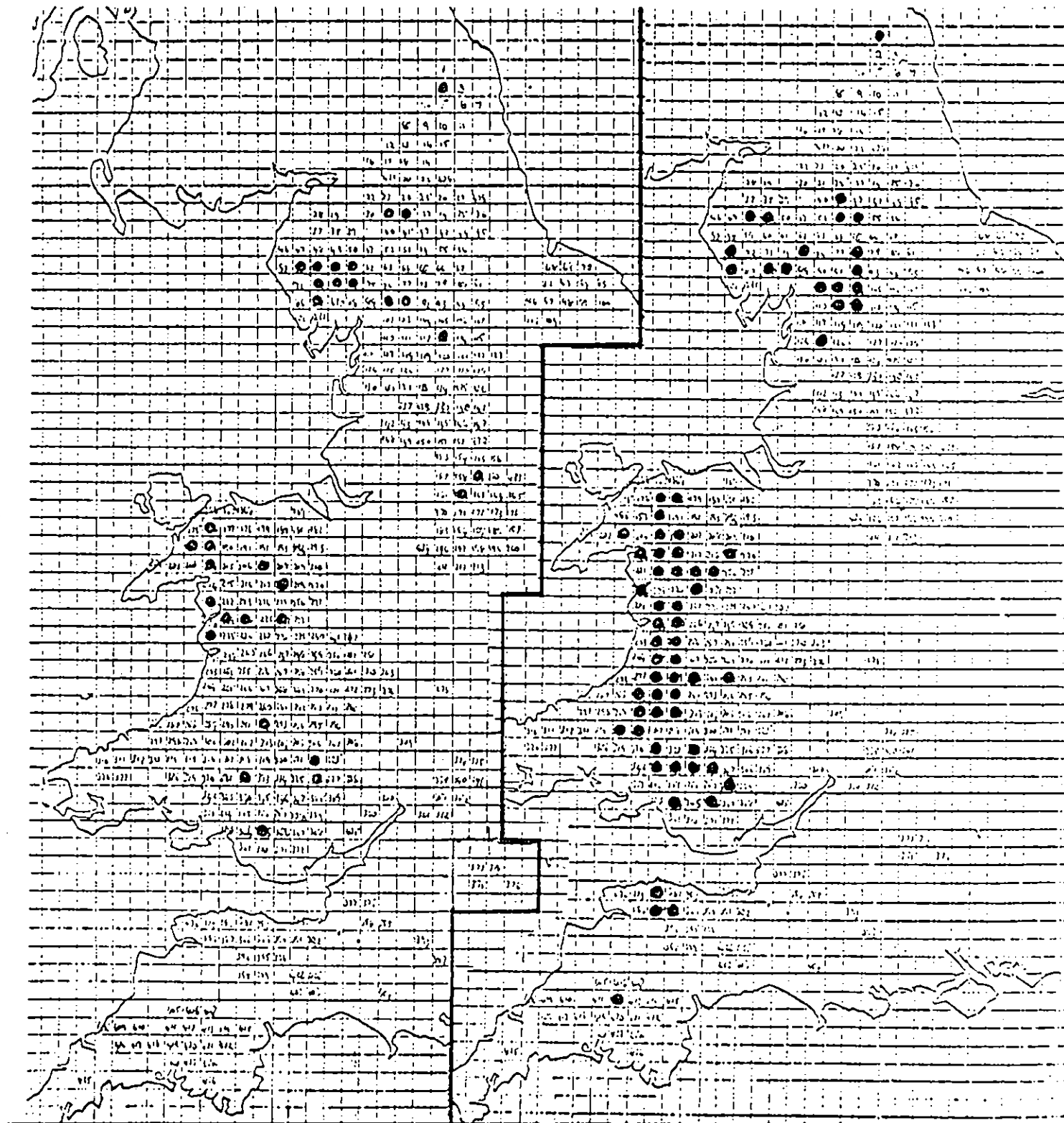


FIG 23 (d) NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A.4 - 8 CLASS.

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(7)

001

(8)

000

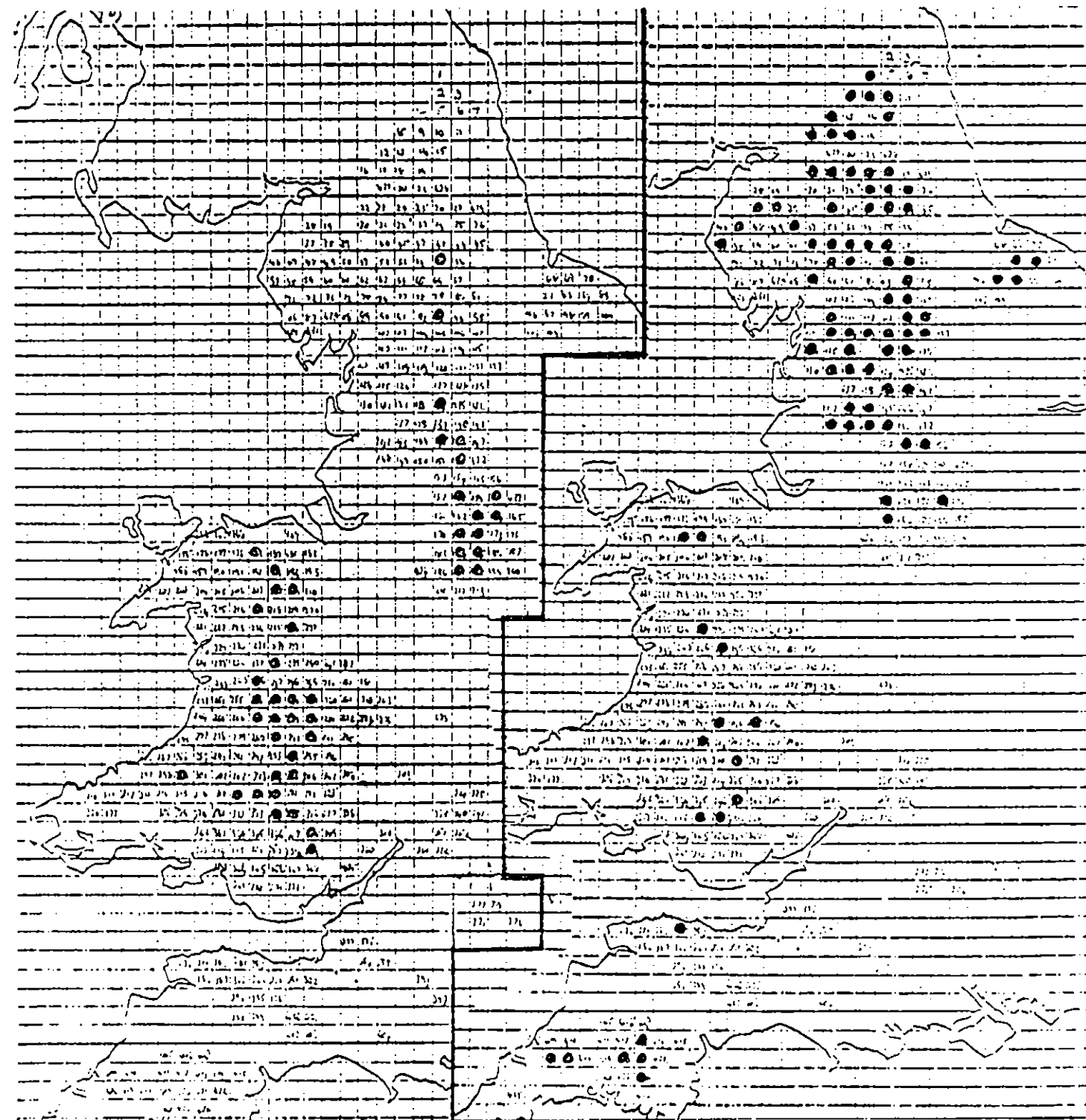


Figure 24. Altitude Class Distribution in Natural Environmental Upland Classification Classes at the 8-Class Level

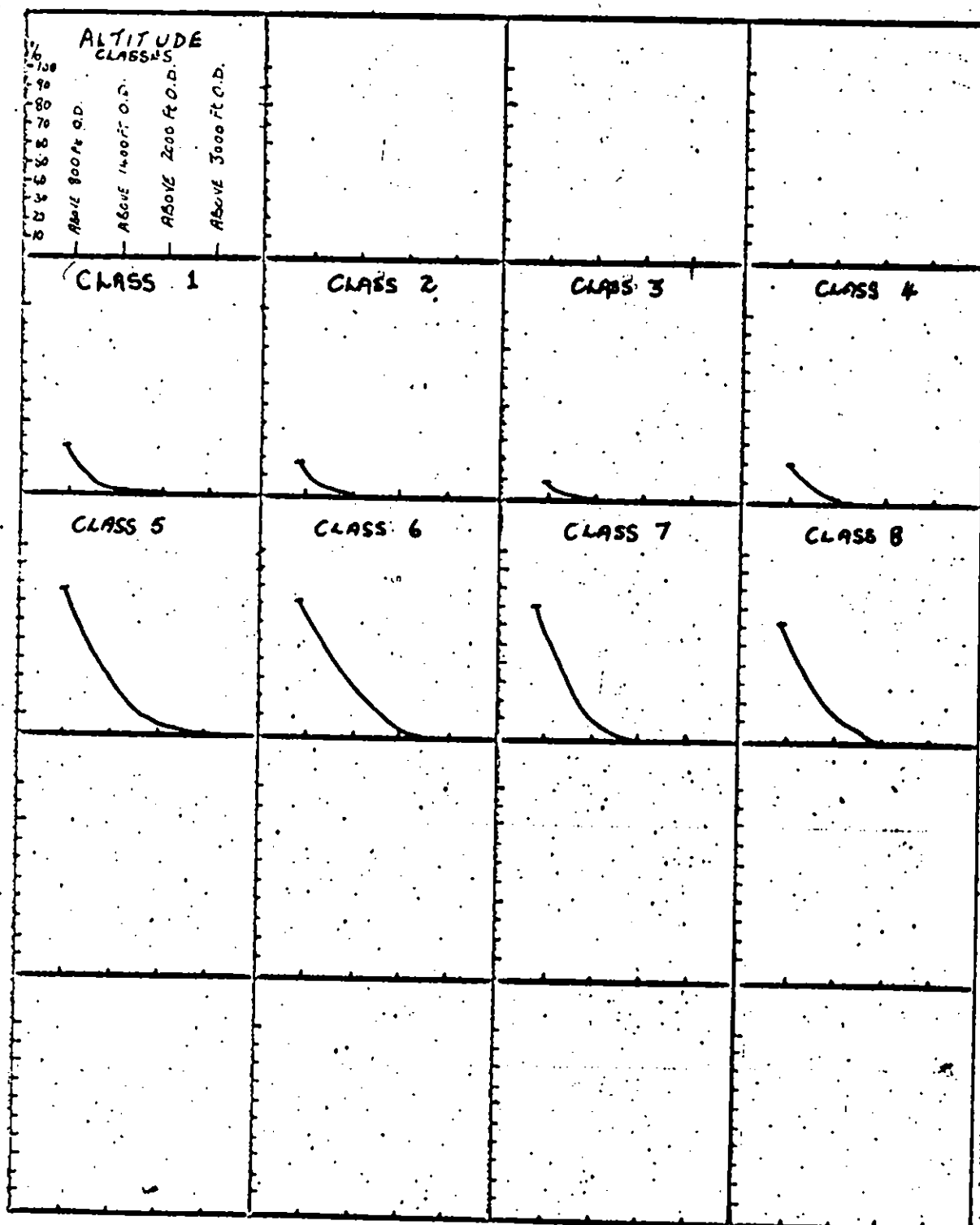


Figure 25. Rainfall Class Distribution in Natural Environmental Upland Classification Classes at the 8-Class Level

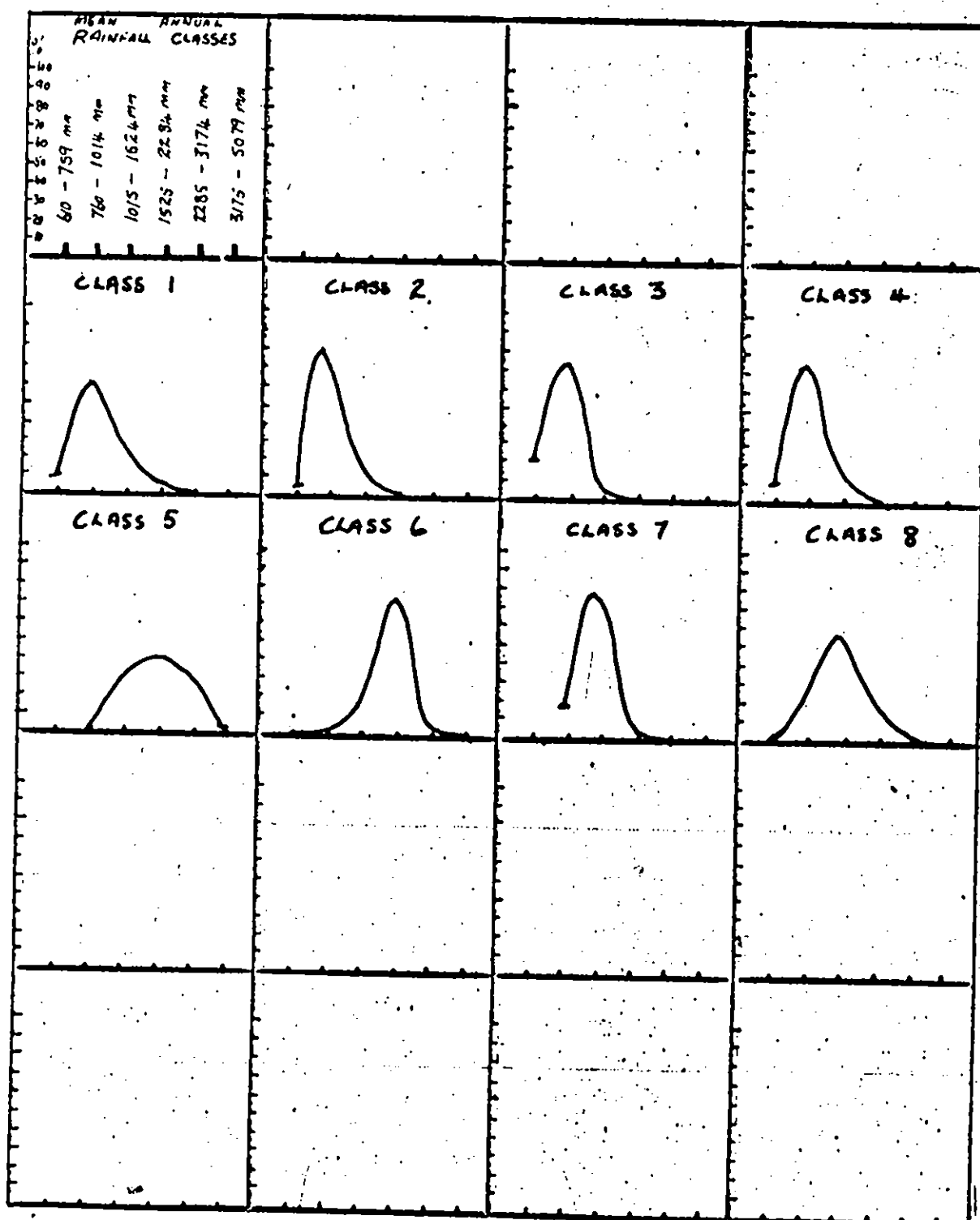


Figure 26. Dominant Soil Group Distribution in Natural Environmental Upland Classification Classes at the 8-Class Level

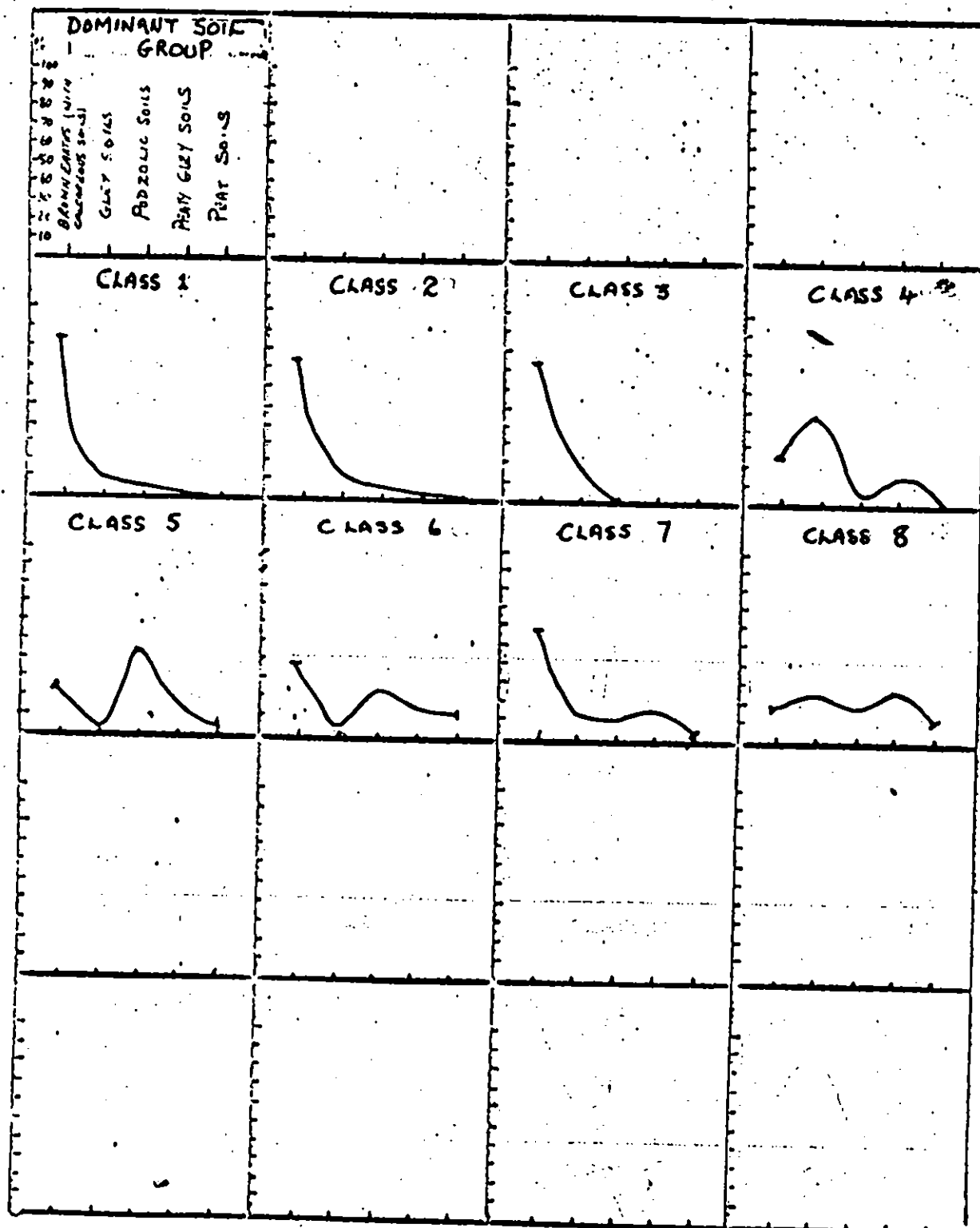


Figure 27. Agricultural Land Use Distribution in Natural Environmental Upland Classification Classes at the 8-Class Level

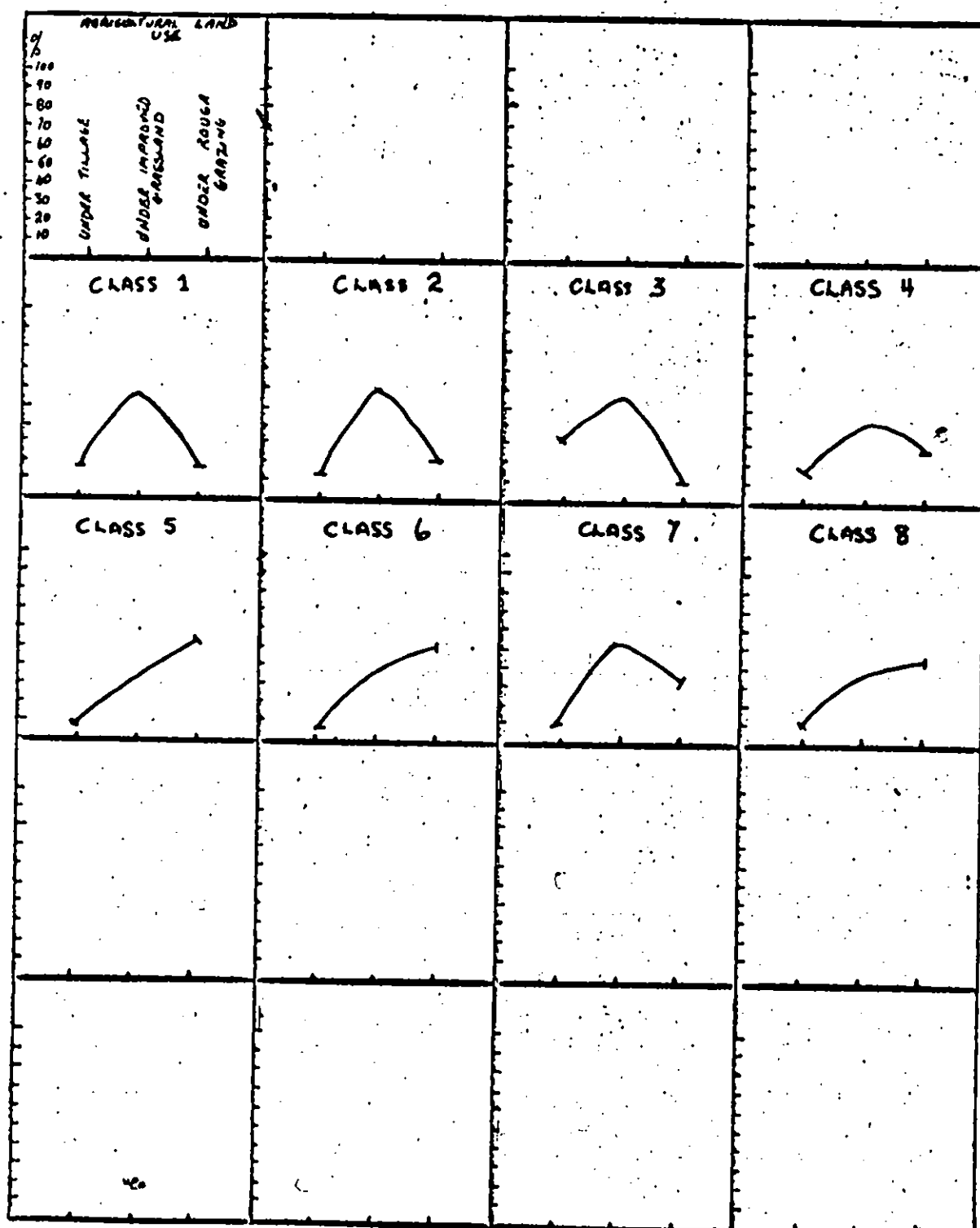


FIGURE 28 KEY FACTORS FOR UPLAND CLASSIFICATION

BY I.S.A. 1. [NATURAL AND "CULTURAL" ATTRIBUTES]

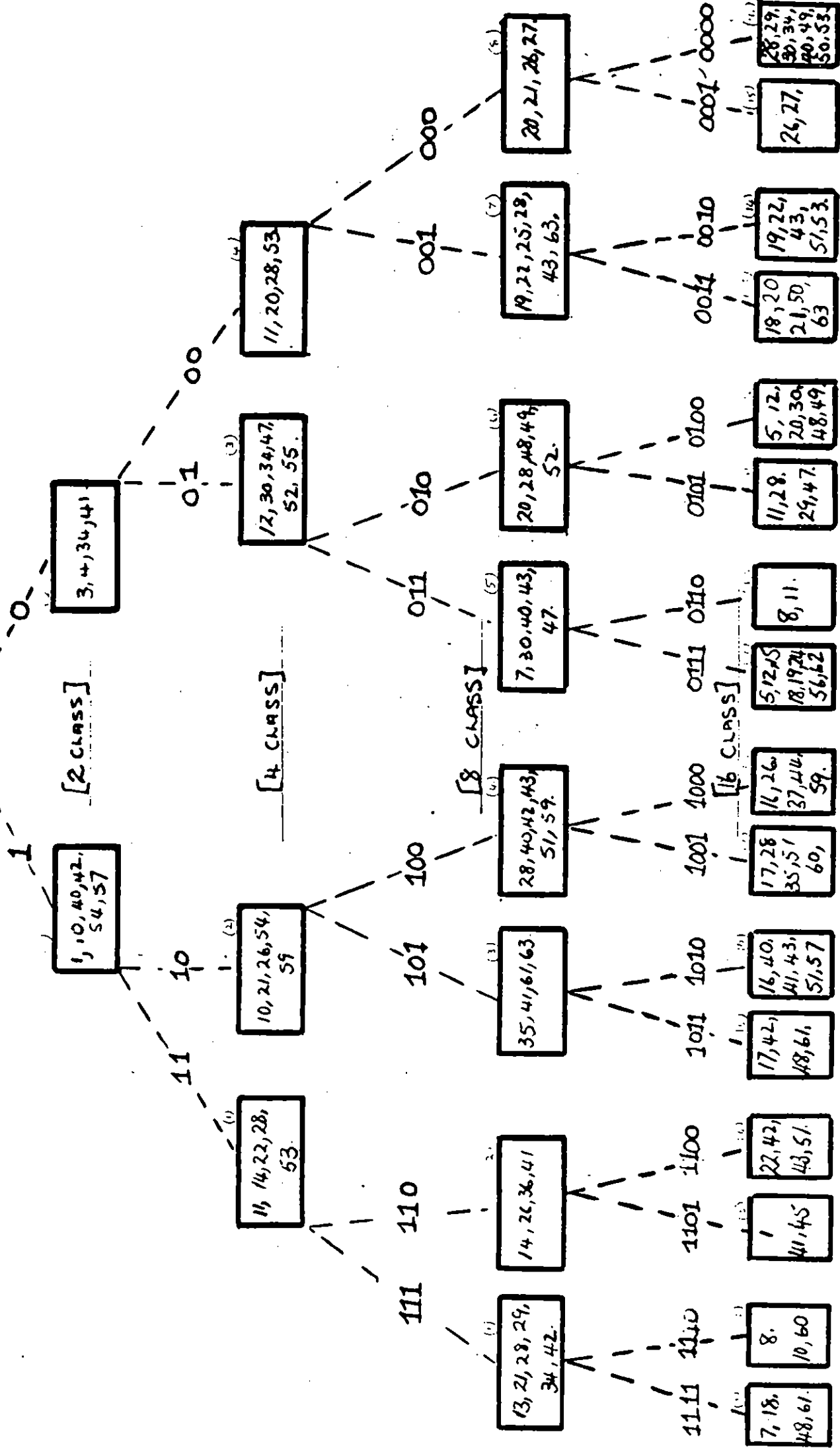


FIG 29

NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 1 - 2 CLASS

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(1)

1

(2)

0

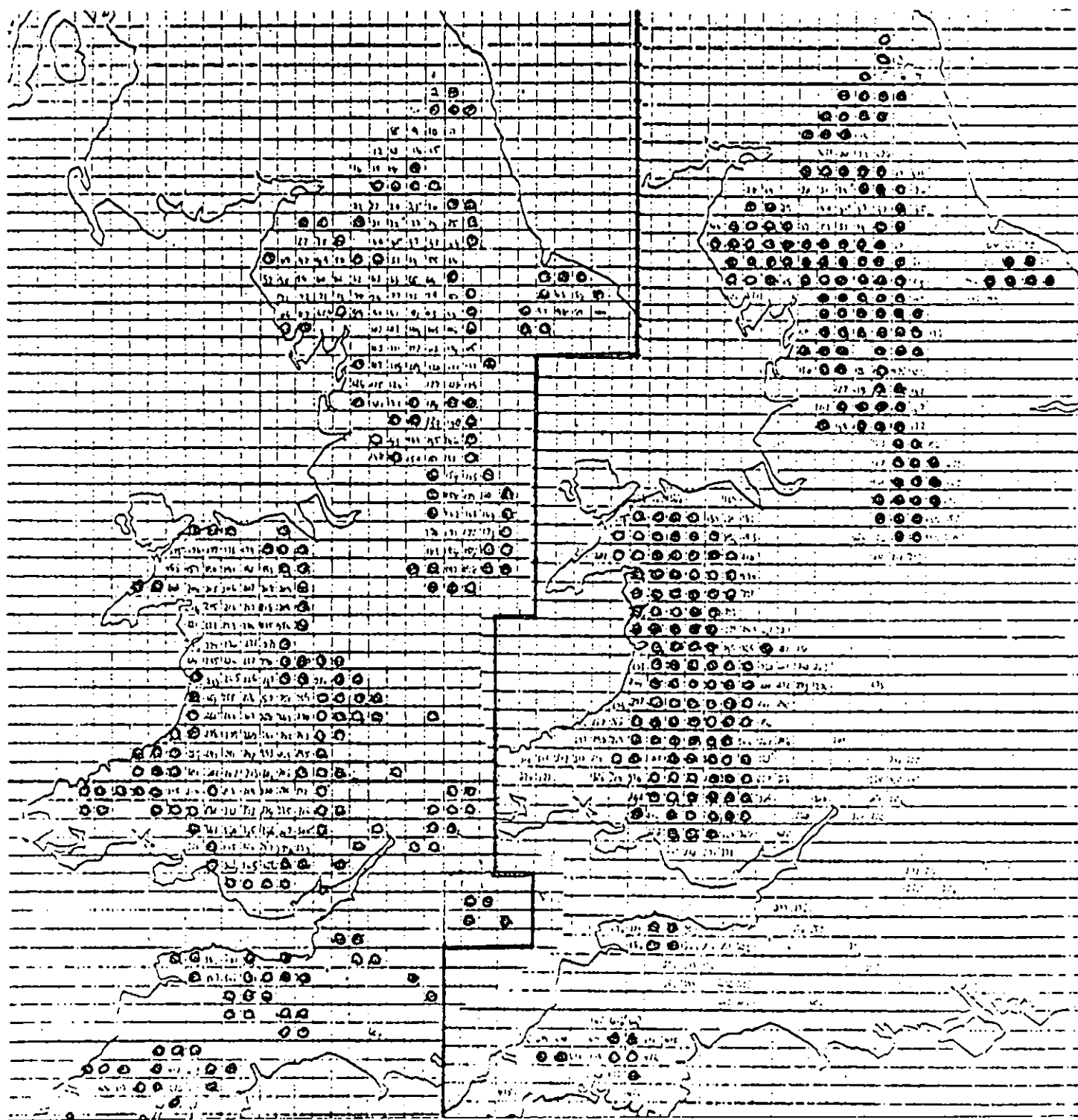


FIG 30 (a)

NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 1 - 4 CLASS.

CODE NUMBER	CLASS INDEX	CODE NUMBER	CLASS INDEX
(1)	11	(2)	10

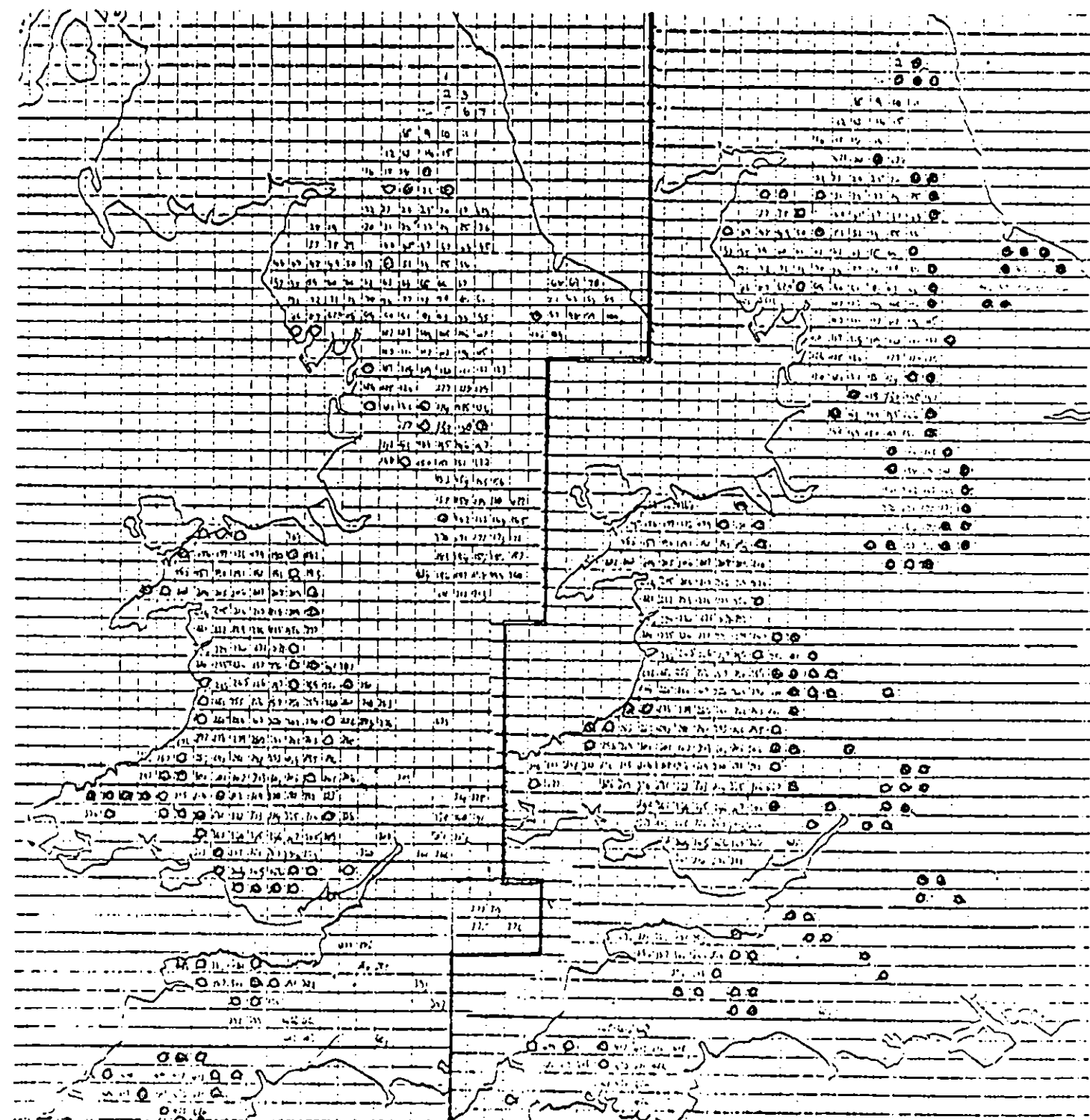


FIG 30 (b)

NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 1 - 4 CLASS

CODE NUMBER

CLASS INDEX

CODE NUMBER

CLASS INDEX

(3)

01

(4)

00

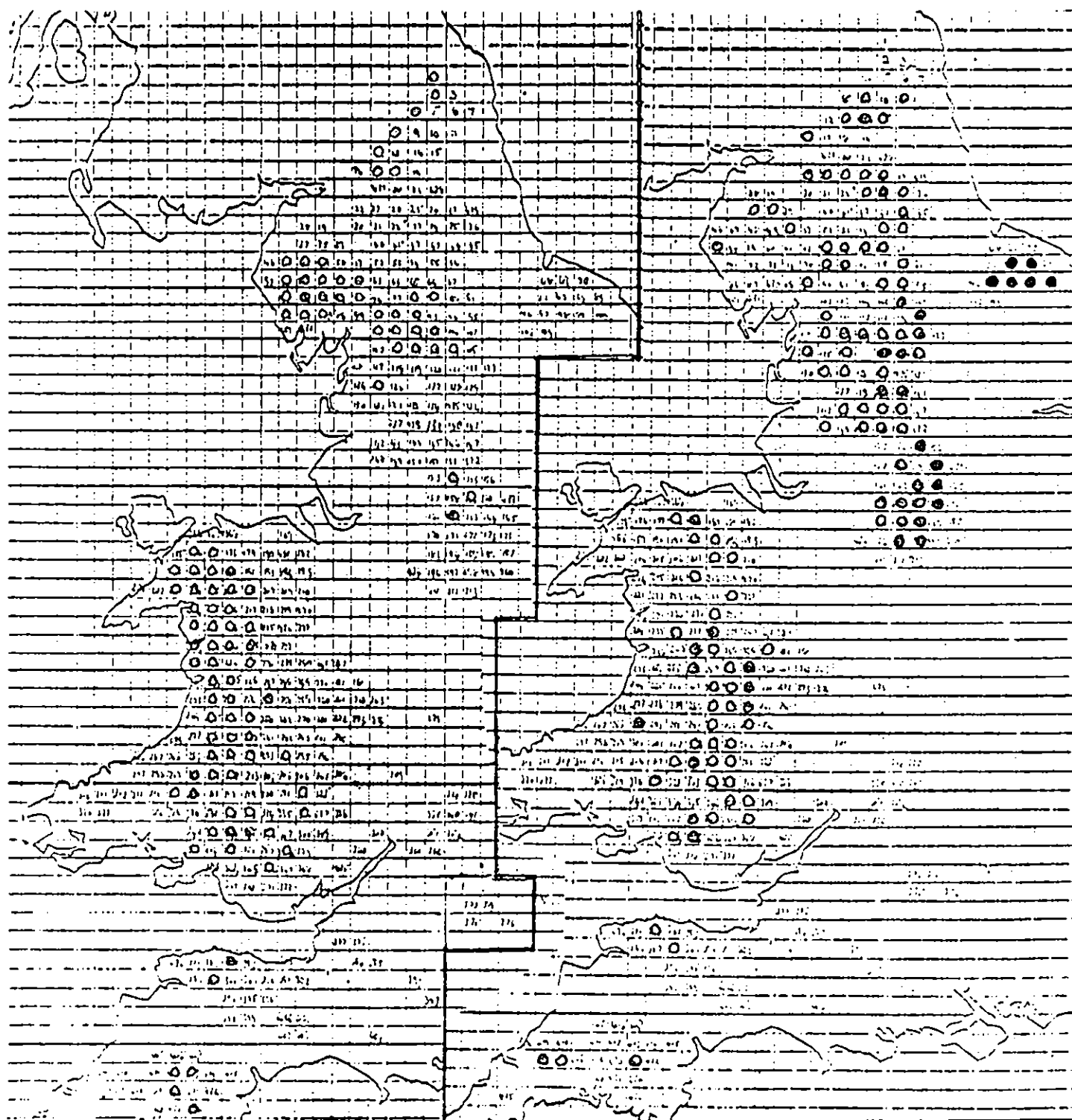


FIG 31 (a)

NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 1 - 8 CLASS

CODE NUMBER

CLASS INDEX

CODE NUMBER

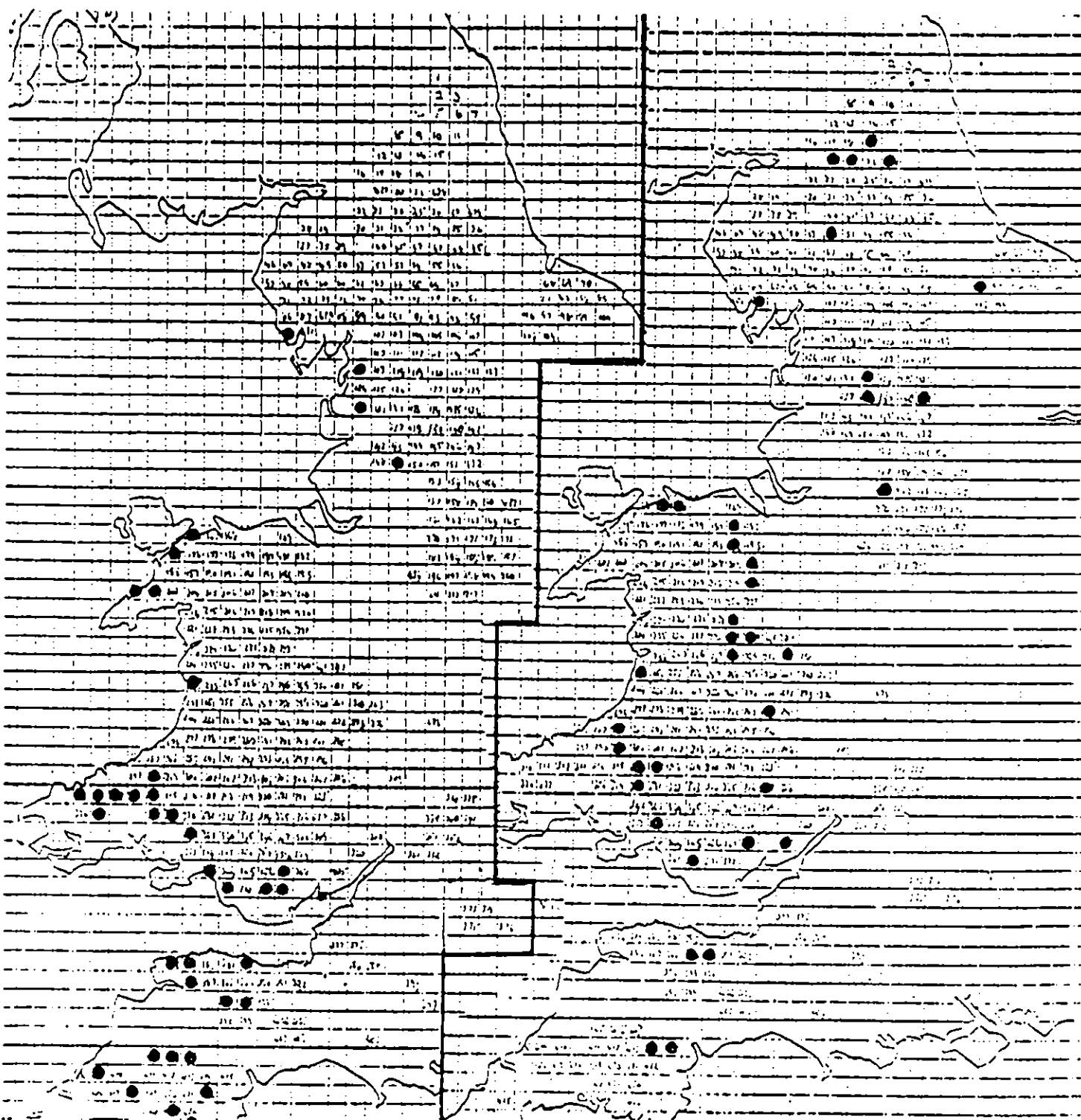
CLASS INDEX

(1)

111

(2)

110



NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A 1 - 8 CLASS.

CODE NUMBER

CLASS INDEX

CODE NUMBER

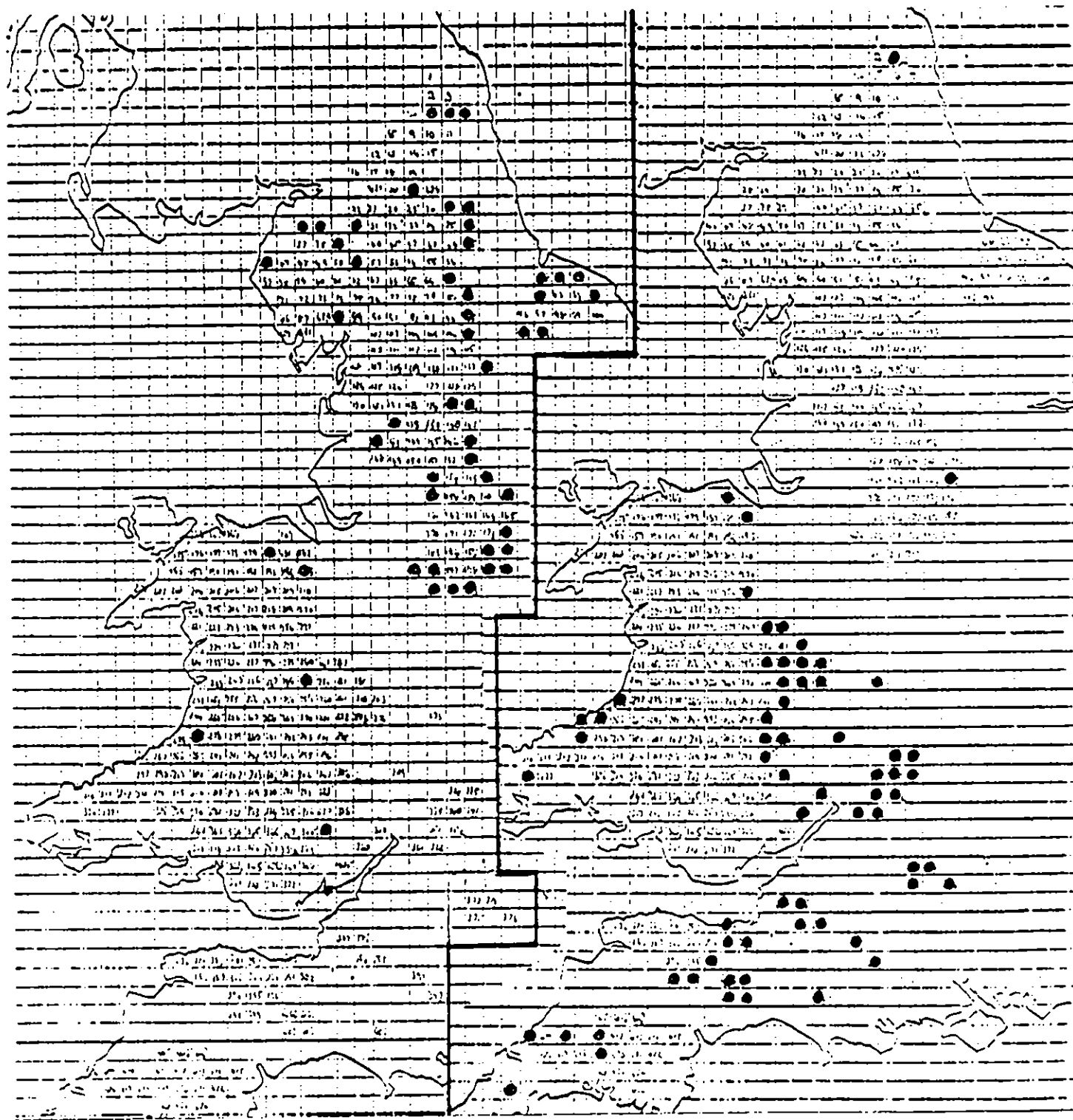
CLASS INDEX

(3)

101

(4)

100



NATURAL AND CULTURAL ENVIRONMENTAL (UPLAND) CLASSIFICATION.

I.S.A. 1 - 8 CLASS

CODE NUMBER	CLASS INDEX	CODE NUMBER	CLASS INDEX
(5)	011	(6)	010

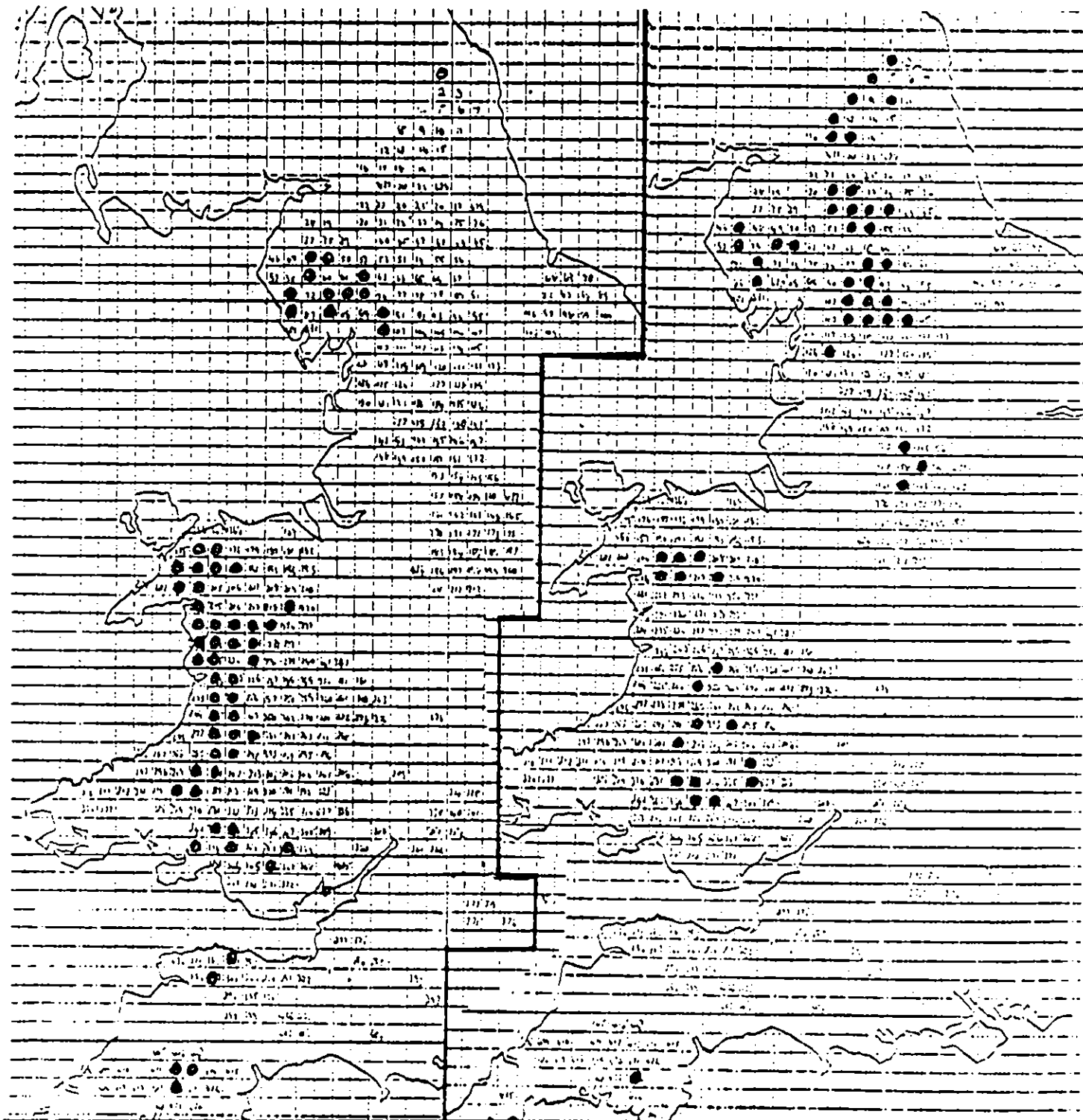


Fig. 31(d)

NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION.

I.S.A. 1 - 8 CLASS

CODE NUMBER CLASS INDEX

(7) 001

CODE NUMBER

CLASS INDEX

(8)

000

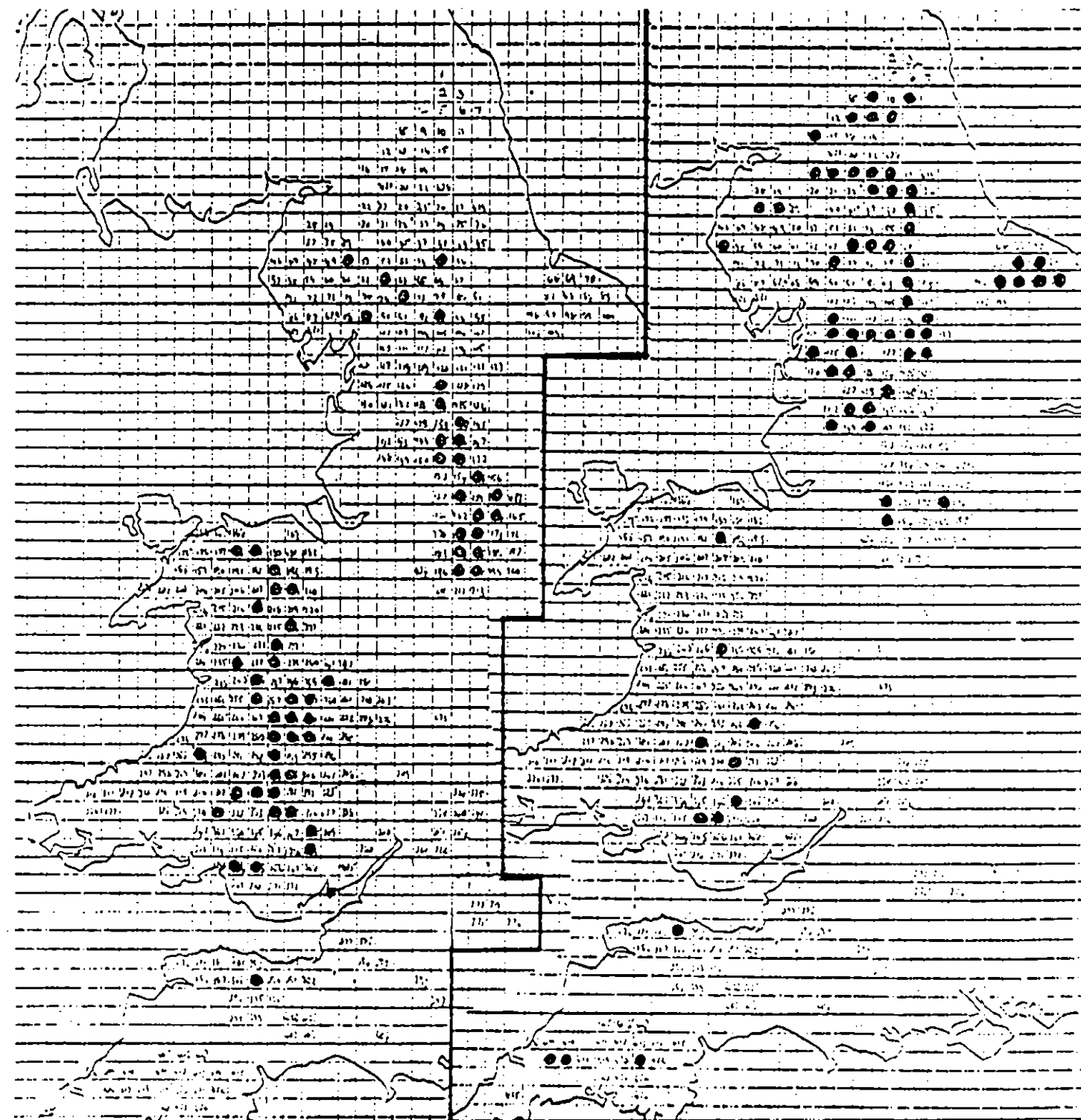


Figure 32. Altitude Class Distribution in Natural and Cultural Environmental Upland Classification Classes at the 8-Class Level

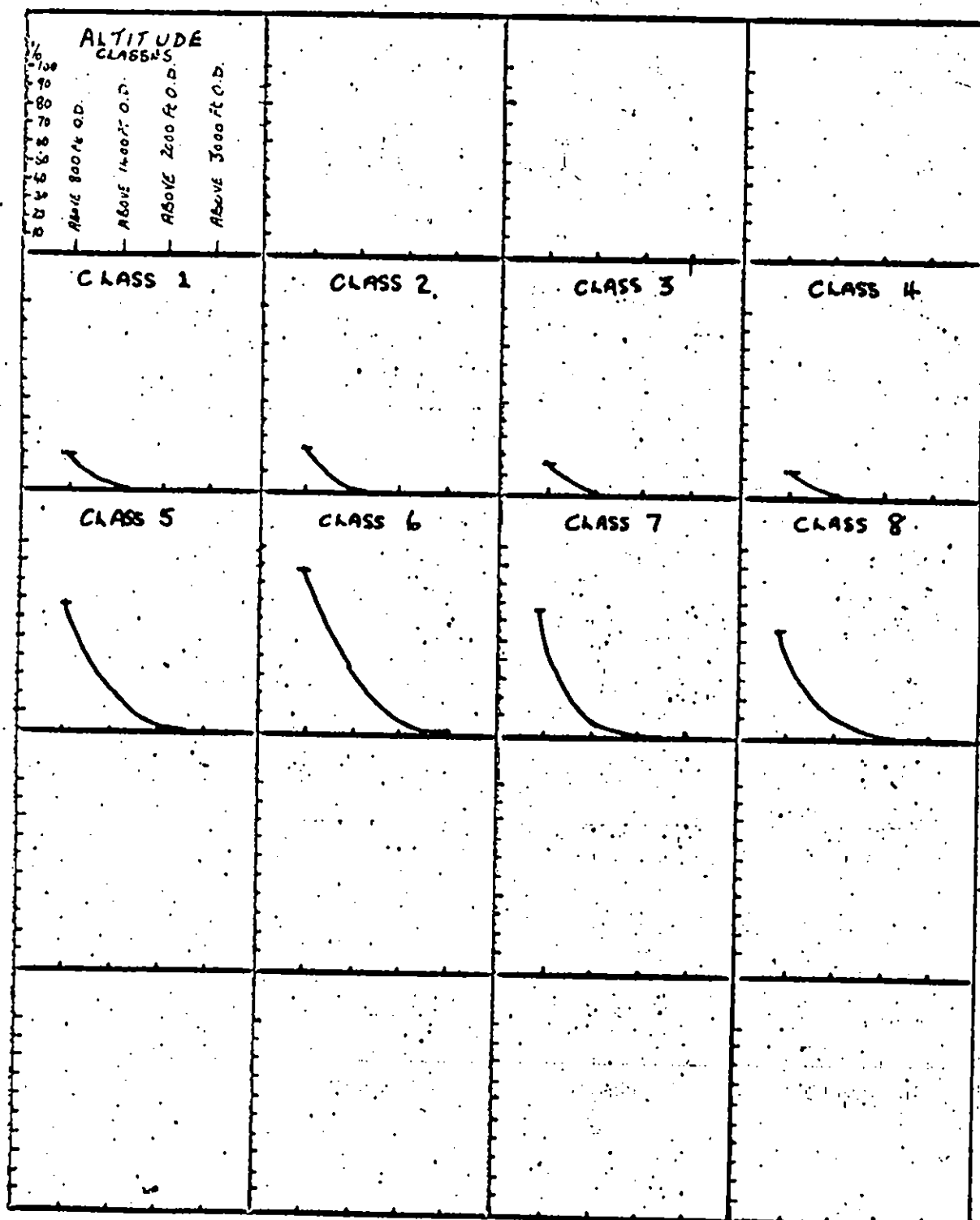


Figure 33. Rainfall Class Distribution in Natural and Cultural Environmental Upland Classification Classes at the 8-Class Level

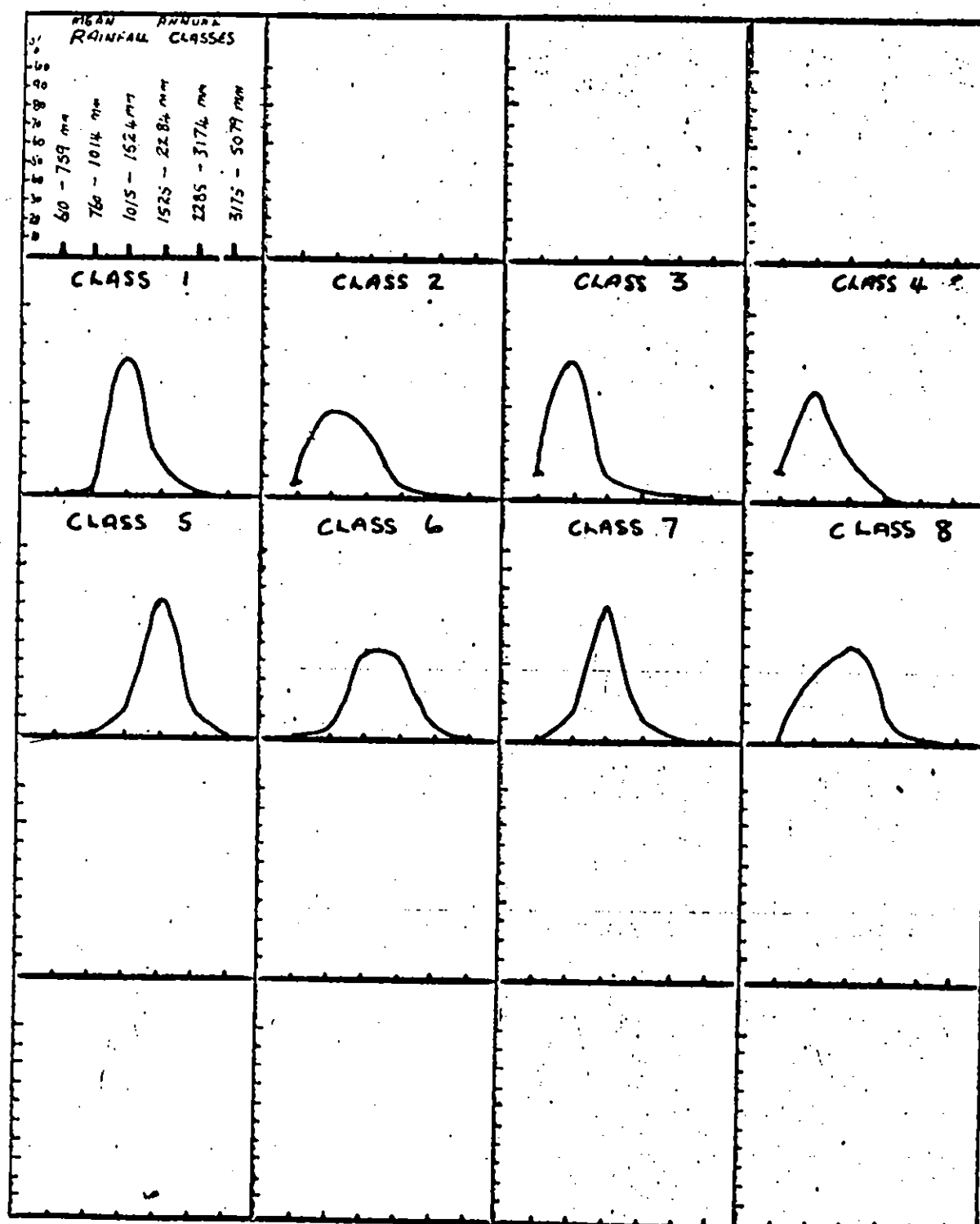


Figure 34. Dominant Soil Group Distribution in Natural and Cultural Environmental Upland Classification Classes at the 8-Class Level

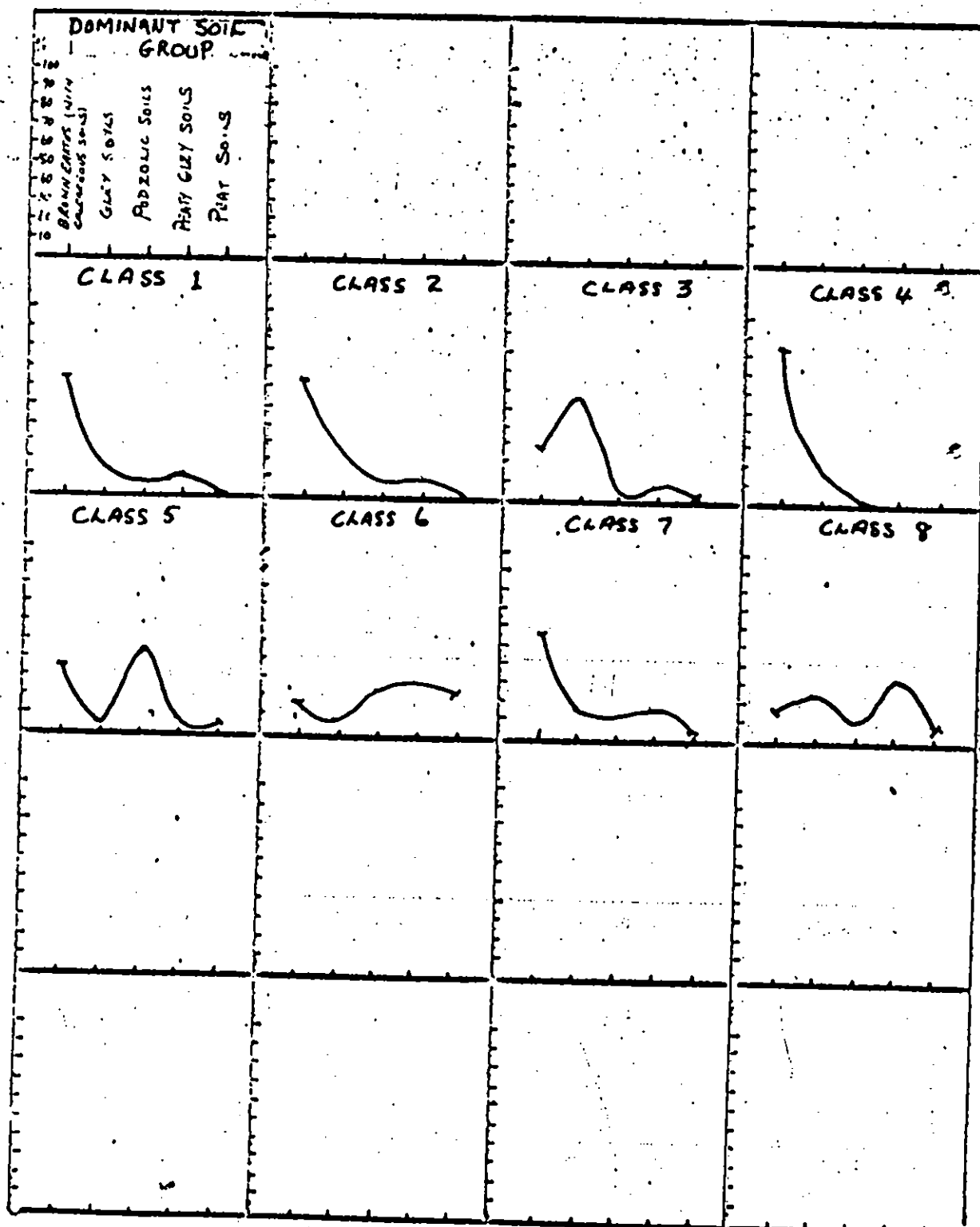
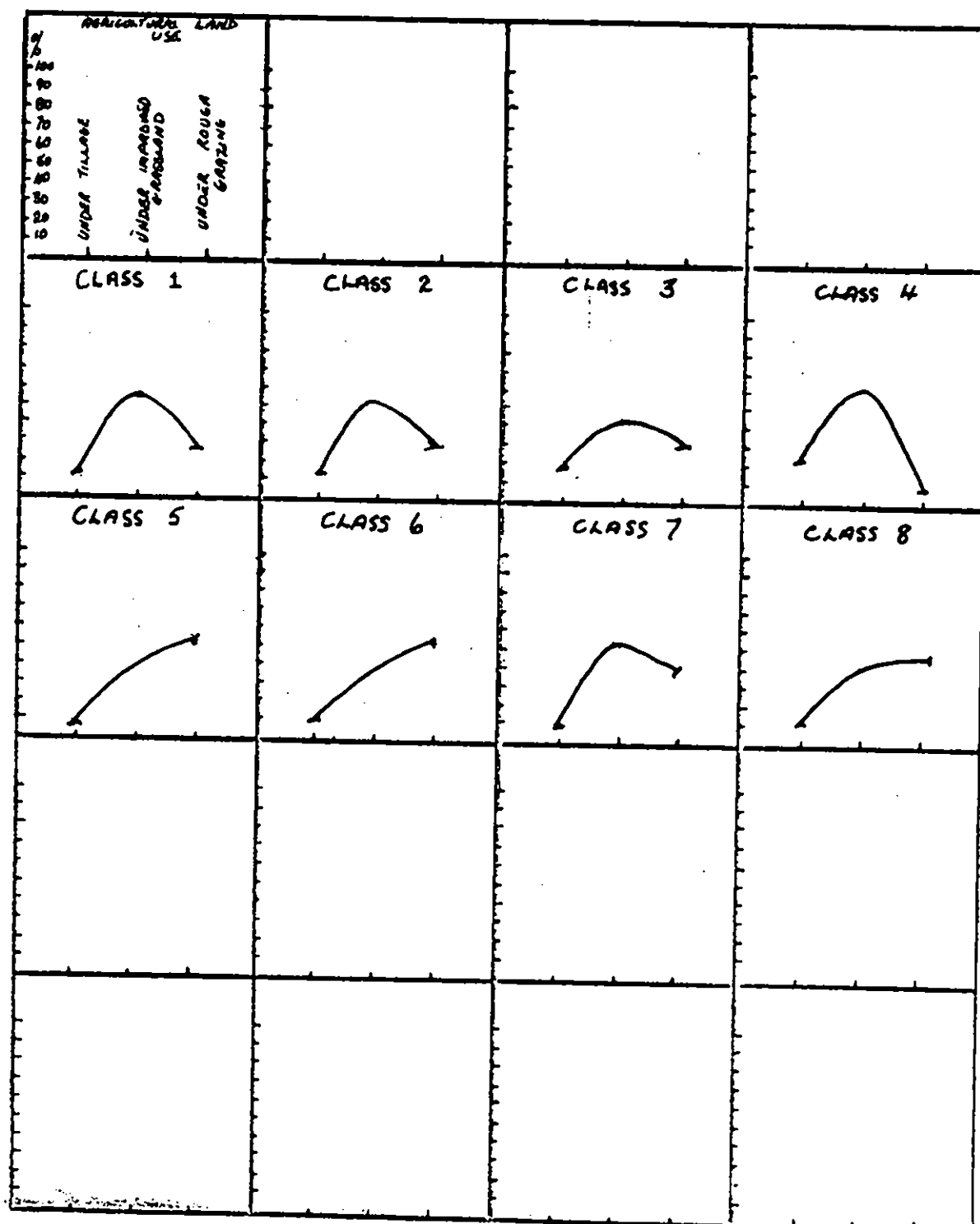


Figure 35. Agricultural Land Use Distribution in Natural and Cultural Environmental Upland Classification Classes at the 8-Class Level.



[illegible]

11

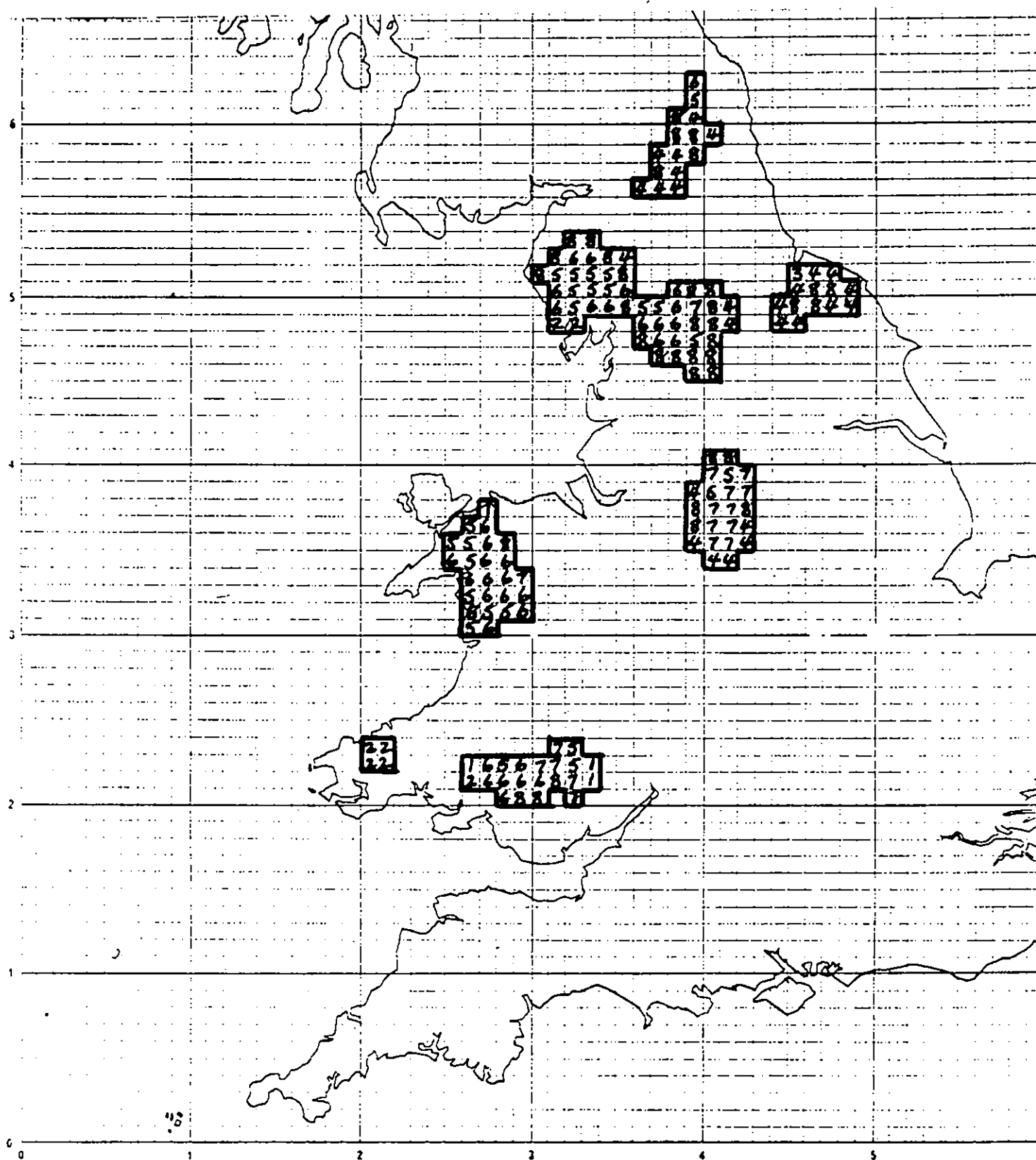


TABLE 1

SUMMARY OF ATTRIBUTES RECORDED FOR NATIONAL UPLAND CHARACTERISATION

Classification units are 10 x 10 km grid squares determined as having $\geq 4\%$ of land above 800 ft. O.D. (c. 244 m)

1 PHYSIOGRAPHYAltitude (as %, units of 4%)

- 1.1 Land ≥ 800 ft. O.D. (c. 244 m)
- 1.2 Land $\geq 1,400$ ft. O.D. (c. 427 m)
- 1.3 Land $\geq 2,000$ ft. O.D. (c. 610 m)
- 1.4 Land $\geq 3,000$ ft. O.D. (c. 914 m)

Altitude range (as altitude in feet)

- 1.5 Lowest altitude
- 1.6 Highest altitude

Surface roughness (as a number)

- 1.7 Number of major changes of slope direction on N-S transect through square
- 1.8 Number of major changes of slope direction on E-W transect through square

River density (as a number)

- 1.9 Number of rivers intersected by N-S transect through square
- 1.10 Number of rivers intersected by E-W transect through square

Freshwater bodies (as a number)

- 1.11 Number of lakes or reservoirs

Slope class (as %, units of 10%)

- 1.12 Land of slope $0-11^\circ$
- 1.13 Land of slope $12-22^\circ$
- 1.14 Land of slope $\geq 22^\circ$

2 CLIMATERainfall (as % of land in classes of mean annual rainfall, units of 4%)

- 2.1 Land having rainfall 610-759 mm
- 2.2 Land having rainfall 760-1,014 mm
- 2.3 Land having rainfall 1,015-1,524 mm
- 2.4 Land having rainfall 1,525-2,284 mm
- 2.5 Land having rainfall 2,285-3,174 mm
- 2.6 Land having rainfall 3,175-5,079 mm

Evapotranspiration

(as % of land in classes of average maximum soil moisture deficit in mm (M.D.), units of 10%)

- 2.7 Land having zero M.D.
- 2.8 Land having M.D. 1-24 mm
- 2.9 Land having M.D. 25-49 mm
- 2.10 Land having M.D. 50-74 mm
- 2.11 Land having M.D. 75-99 mm
- 2.12 Land having M.D. 100-124 mm
- 2.13 Land having M.D. 125-149 mm
- 2.14 Land having M.D. >149 mm

Accumulated temperature

(as percentage of land in classes of accumulated temperature in day/°C above 5.6°C (A.T.), units of 10%)

- 2.15 Land having A.T. <825 day/°C
- 2.16 Land having A.T. 825-1,099 day/°C
- 2.17 Land having A.T. 1,100-1,374 day/°C
- 2.18 Land having A.T. 1,375-1,649 day/°C
- 2.19 Land having A.T. 1,650-2,000 day/°C

Sunshine (as a number)

- 2.20 Annual average of daily bright sunshine in hours

3 SOILS

(as % of land in classes dominated by given soil groups, units of 10%)

- 3.1 Land with dominant soils Brown Earth variants
 - 3.2 Land with dominant soils Rendzinas and Calcareous Soils
 - 3.3 Land with dominant soils Gley Soils
 - 3.4 Land with dominant soils Brown Podzolic Soils
 - 3.5 Land with dominant soils Podzols and Stagnopodzols
 - 3.6 Land with dominant soils Stagnohumic Gley Soils
 - 3.7 Land with dominant soils Peat Soils
-

4 TOPOGRAPHY

Settlement Density (as a number)

- 4.1 Number of towns
- 4.2 Number of villages
- 4.3 Number of hamlets

Road Density (as a number)

- 4.4 Number of major roads intersected by N-S transect through square
- 4.5 Number of major roads intersected by E-W transect through square
- 4.6 Number of minor roads intersected by N-S transect through square
- 4.7 Number of minor roads intersected by E-W transect through square

Railway Density (as a number)

- 4.8 Number of railways intersected by N-S transect through square
 - 4.9 Number of railways intersected by E-W transect through square
-

5 LAND USE

Agricultural Land (as calculated %, units of 1%)

- 5.1 Agricultural land under tillage
- 5.2 Agricultural land under improved grass
- 5.3 Agricultural land under rough grazing

Stock Density (as a number)

- 5.4 Livestock units per 100 acres

Labour Intensity (as a number)

- 5.5 Man-days per 100 acres

Forest (as %, units of 4%)

- 5.6 Land mapped as forest

Urban (as %, units of 1%)

- 5.7 Land mapped as towns
-

6 LAND CLASSIFICATION

Agricultural Land Classification classes (as %, units of 4%)

- 6.1 Land of class 1
 - 6.2 Land of class 2
 - 6.3 Land of class 3
 - 6.4 Land of class 4
 - 6.5 Land of class 5
 - 6.6 Land in urban use
 - 6.7 Land primarily in non-agricultural use.
-

Table 2 PERCENTAGE OF LAND >800 ft. IN COUNTIES OF ENGLAND AND WALES

English Counties		Welsh Counties	
County	% land > 800 ft. O.D.	County	% land > 800 ft. O.D.
Durham	39	Powys	70
Cumbria	36	Gwynedd	43
Derbyshire	35	Mid Glamorgan	41
Northumberland	28	Clwyd	35
North Yorkshire	25	Dyfed	21
Lancashire	21	West Glamorgan	18
West Yorkshire	21	Gwent	9
Greater Manchester	16		
Somerset	16		
Devon	13		
Salop	11		
Staffordshire	9		
South Yorkshire	6		
Cheshire	6		
Gloucestershire	5		
Cornwall	5		
Cleveland	5		
Hereford and Worcestershire	4		
Wiltshire	1		
Dorset	< 1		

(From The Local Government Companion, No 4, 1975/76)

Table 3 UPLAND REGIONS

Major Regions - England	Major Regions - Wales
<p>1 Cheviot</p> <p>2 Northern Pennines</p> <p>3 Central Pennines</p> <p>4 Southern Pennines</p> <p>5 Peak District</p> <p>6 Lake District</p> <p>7 North York Moors</p> <p>8 Shropshire Hills</p> <p>9 Exmoor-Brendon Hills</p> <p>10 Dartmoor</p>	<p>11 Snowdonia</p> <p>12 Hiraethog</p> <p>13 Clwydian Hills</p> <p>14 Berwyn Mountains</p> <p>15 Cambrian Mountains</p> <p>16 Radnor-Clun Forests</p> <p>17 Brecon Mountains</p> <p>18 South Wales Coalfield</p>
Minor Regions - England	Minor Regions - Wales
<p>19 Forest of Dean, Malvern and Clent Hills</p> <p>20 Cotswold Scarp</p> <p>21 Wiltshire Downs</p> <p>22 Mendip Hills</p> <p>23 Quantock Hills</p> <p>24 North Dorset Scarp</p> <p>25 Blackdown Hills</p> <p>26 Bodmin and St. Austell Moors</p>	<p>27 Prescelly</p>

Table 4 Upland Regions of England and Wales - List and approximate boundaries

	Major Upland Regions	Approximate Natural or Artificial limits (s = sharp boundary; m = merging boundary)			
	ENGLAND	Northern	Eastern	Southern	Western
1	Cheviot	Tweed Valley (s)	Cheviot foothills (s-m) Northumbrian coastal plain	Rodesdale (A696) (s)	Southern Uplands (m)
2	Northern Pennines (= Alston Block and Northumberland Fells)	Rodesdale (A696) (s)	Durham Coalfield (s)	Central Pennines (m), at A.66 road (Barnard Castle-Brough)	Eden Valley (s)
3	Central Pennines (= Askriigg Block and Langdale, HorGill Fells and Forest of Bowland)	Northern Pennines (m), at A.66 road	Vale of York (s)	Southern Pennines (s), at A.59 road (Harrogate-Skipton)	Lune-Eden Valleys (A6-M6) (s-m)
4	Southern Pennines	Central Pennines (m), at A.59 road	West Yorkshire (s)	Peak District (m), at A.628 road (Penistone-Hyde/Glossop)	East Lancashire (s)
5	Peak District	Southern Pennines (m), at A.628 road	North Derbyshire/ Nottinghamshire (s)	South Derbyshire (s)	Cheshire/Staffordshire (s-m)
6	Lake District	Solway Firth coastal strip (s)	Lune-Eden Valleys (A6-M6) (s-m)	Furness (m)	Cumbria coast (s)

Upland Regions of England and Wales - List and approximate boundaries (continued)

	Major Upland Regions	Approximate Natural or Artificial limits (s = sharp boundary; m = merging boundary)			
	ENGLAND	Northern	Eastern	Southern	Western
7	North York Moors	Teeside (s)	Yorkshire coast (s)	"Lake Pickering" basin (s)	Vale of York (s)
8	Shropshire Hills (several small blocks including Longwynd and Clce Hills)	Severn Valley (s)	Severn Valley (s)	Worcestershire (s)	Mid-Wales (Radnor-Clun Forests) (m)
9	Exmoor-Brendon Hills	Bristol Channel (s)	Quantock Hills (s)	North Devon (m)	Taw Valley (s)
10	Dartmoor	North Devon (s)	Exe Valley (s)	South Devon (s)	Tamar Valley (s)
	WALES	Northern	Eastern	Southern	Western
11	Snordonia	Liverpool Bay coast (s)	Conwy Valley (s), in north; National Park boundary (m) (Machynlleth-Bala-Pentre Voelias) in south	Cambrian mountains along Dovey Valley (s)	Arfon lowlands (s) Cardigan Bay coast (s)
12	Hiracethog	North Denbighshire (m)	Vale of Clwyd (s)	Ceirw-Alwen Valley (m), approx. at A.5 road	Conwy Valley (s-m)

Upland Regions of England and Wales - List and approximate boundaries (continued)

	Major Upland Regions	Approximate Natural or Artificial Limits (s = sharp boundary; n = merging boundary)			
	WALS	Northern	Eastern	Southern	Western
13	Clwydian Hills	North Flintshire (s-n)	East Flintshire (n)	Bervyn Mountains (n),	Vale of Clwyd (n)
14	Bervyn Mountains	Clwydian Hills (n), at A.5 road	Shropshire lowland (n)	Cambrian Mountains (n), at A.458 Mallwyd-Welshpool road	Shrodonia (n)
15	Cambrian Mountains	Shrodonia (s) along Dovey Valley and Bervyn Mountains (n) (line of Machynlleth -Mallwyd-Welshpool)	Radnor-Clun Forests (n) (line of Builth Newtown and Nant Irfon)	Towy Valley (s-n) (and line Llandovery -Builth)	Teifi Valley (s-n)
16	Radnor-Clun Forests (includes small part in Shropshire)	Shropshire Hills (n)	Herefordshire (n)	Brecon Mountains (s-n) (Wye Valley)	Cambrian Mountains (n)
17	Brecon Mountains (includes Black Mountains (Brecon), Brecon Beacons, Knydd Egwynt, and Black Mountains (Carnarthen))	Cambrian mountains (n) Radnor-Clun Forests	Herefordshire- Monmouthshire (Wye Valley in north- east (s-n))	South Wales Coalfield (n)	Towy Valley (s)
18	South Wales Coalfield	Brecon Mountains (n)	Usk Valley (s-n)	Vale of Glamorgan(s)	Loughor Valley (s-n)

Upland Regions of England and Wales - List and Approximate Boundaries (continued)

	Minor Upland Regions	Approximate Natural or Artificial limits (s = sharp boundary; m = merging boundary)			
	ENGLAND	Northern	Eastern	Southern	Western
19	Forest of Dean, Malvern and Clent Hills (small sectors, not >1,000 ft.)				
20	Cotswold Scarp (a line of small fragments (>200 ft. but little >1,000 ft.))	Vale of Evesham (s)	Cotswolds (m)	Cotswolds (m)	Vale of Gloucester (m)
21	Wiltshire Downs (small sectors, not >1,000 ft.)	Vale of White Horse (m)	Wiltshire Downs (m)	Wiltshire Downs (m)	Avon Valley (m)
22	Mendip Hills (very little >1,000 ft.)	North Somerset/Yeo-Chew Valleys (s)	Frome Valley (s)	Somerset Levels (s)	Somerset Levels (s)
23	Quantock Hills (small sector just exceeds 1,200 ft.)	Bristol Channel (s)	Somerset Levels (s)	Vale of Taunton (s)	Exmoor (m)
24	North Dorset Scarp (small sectors, not >1,000 ft.)	Blackmoor Vale (s)	Stow Valley (s)	South Dorset (m)	East Somerset/Blackdown Hills (s-m)

Upland Regions of England and Wales - limit and approximate boundaries (continued)

	Minor Upland Regions	Approximate Natural or Artificial Limits (s = sharp boundary; m = merging boundary)			
	ENGLAND	Northern	Eastern	Southern	Western
25	Blackdown Hills (small sectors, not > 1,000 ft.)	Vale of Taunton (s) / Brendon Hills (m)	Aze Valley (m)	South Devon/West Dorset (m)	Culm Valley (s-m)
26	Balmuccia St. Austell Moor (just exceeds 1,000 ft.) Paduin Moor (little over 1,200 ft. (to 1,377 ft.))	North Cornwall (s)	Poey Estuary coast (m)	English Channel (s)	South Cornwall (m)
		Cornish coast (s)	Tamar Valley (s)	South Cornwall (m)	Camel Valley (m)
	WALES	Northern	Eastern	Southern	Western
27	Prescelly	Fishguard Bay coastal strip/Nyfer Valley (s)	A.478 Cardigan-Rarbeth road (s)	line Letterston-Foel Drych (s)	line Letterston-Fishguard (s)

Note Boundaries have been selected as convenient, usually widely used, natural or artificial features, but for data presentation these are squared off along the closest convenient 10 x 10 km grid square boundaries, so that any one 10 x 10 km square is entirely within one named region.

Table 5 GEOGRAPHIC REGIONS OF THE UPLAND OF ENGLAND AND WALES

Major Upland Regions - ENGLAND	Index Numbers of Grid Squares in Regions
1 Cheviot ¹	1-5 (5 squares)
2 Northern Pennines ¹	6-27, 30-36, 40-45, 52-56, 64-67, 427-429 (47 squares)
3 Central Pennines	63, 76-81, 90-95, 102-107, 110-131 (41 squares)
4 Southern Pennines	132-156, 432 (26 squares)
5 Peak District	157-165, 170-174, 183-187, 196-200, 211-213, 433, 434 (29 squares)
6 Lake District	28, 29, 37-39, 46-51, 57-62, 71-75, 86-89, 101, 430, 431 (29 squares)
7 North York Moors	68-70, 82-85, 96-100, 108, 109 (14 squares)
8 Shropshire Hills ²	240-242, 250-252, 260-263, 272-274, 285 (14 squares)
9 Exmoor-Brendon Hills	379-382, 386-390, 394-396, 398, 399, 436 (15 squares)
10 Dartmoor	405-407, 411-415, 418-424, 426 (16 squares)

1 The geographic limits most conveniently put on these regions include a few additional grid squares which cross the Scottish border. In order to give full compatibility of all data used in this study, these squares have been omitted.

2 Two grid squares in this geographic region partly cross the Welsh border.

Major Upland Regions - WALES	Index Numbers of Grid Squares in Regions
11 Snowdonia	166, 167, 175-177, 188-190, 201-207, 214-217, 221-223, 228-230, 234, 235 (27 squares)
12 Hiraethog	168, 178-180, 191-193, 208 (8 squares)
13 Clwydian Hills	169, 181, 182, 194, 195, 209, 210 (7 squares)
14 Berwyn Mountains ¹	218-220, 224-227, 231-233 (10 squares)
15 Cambrian Mountains	236-238, 243-247, 253-257, 264-268, 276-281, 286-292, 297-302, 312-317, 328, 329 (45 squares)
16 Radnor-Clun Forests ¹	239, 248, 249, 258, 259, 269-271, 282-284, 293-296, 305-308 (19 squares)
17 Brecon Mountains ¹	303, 304, 318-323, 330-338, 342-349 (25 squares)
18 South Wales Coalfield	353-359, 363-372 (17 squares)

¹ Some grid squares in these geographic regions partly or wholly cross the English border.

Minor Upland Regions - ENGLAND	Index Numbers of Grid Squares in Regions
19 Forest of Dean, Malvern and Clent Hills	275, 309, 350, 360, 435 (5 squares)
20 Cotswold Scarp	324, 325, 339-341, 351, 352, 361, 362 (9 squares)
21 Wiltshire Downs	373-376 (4 squares)
22 Mendip Hills	377, 378, 384, 385 (4 squares)
23 Quantock Hills	383, 391, 392 (3 squares)
24 North Dorset Scarp	393, 397, 404 (3 squares)
25 Blackdown Hills	400-403 (4 squares)
26 Bodmin and St. Austell Moors	408-410, 416, 417, 425 (6 squares)

Minor Upland Regions - WALES	Index Numbers of Grid Squares in Regions
27 Prescelly	310, 311, 326, 327 (4 squares)

Table 6 "CORE" AREAS OF THE MAJOR UPLAND REGIONS

Region	Number of 10 x 10 km grid squares in major upland region	Number of grid squares having > 50% land > 800 ft. O.D., and forming core region	Numbers of the grid squares forming core regions
1 Cheviot	5	3	1, 2, 4
2 Northern Pennines	47	20	23-26, 31-35, 40-44, 53-56, 65, 66
3 Central Pennines	41	25	76-80, 90-94, 102-106, 111-115, 119-122, 129
4 Southern Pennines	26	10	134, 139, 140, 143-146, 152, 154, 155
5 Peak District	29	15	158-160, 162-164, 170-173, 184, 185, 197-199
6 Lake District	29	13	38, 48-50, 58-62, 71, 72, 74, 75
7 North York Moors	14	3	83, 97, 98
8 Shropshire Hills	14	2	250, 251
9 Exmoor-Brendon Hills	15	5	380, 381, 387-389
10 Dartmoor	16	5	412, 413, 420, 421, 424
11 Snowdonia	27	16	176, 177, 188-190, 205-207, 215-217, 221-223, 229, 230
12 Hiraethog	8	6	178, 179, 191-193, 208
13 Clwydian Hills	7	2	195, 209
14 Eerwyn Mountains	10	7	218-220, 224, 225, 231, 232
15 Cambrian Mountains	45	21	237, 238, 244, 245, 254-257, 265-268, 278-280, 290-292, 300-302
16 Radnor-Clun Forests	19	9	258, 259, 269, 270, 282, 283, 294, 295, 305
17 Brecon Mountains	25	16	303, 304, 318-320, 322, 332-334, 336, 343-348
18 South Wales Coalfield	17	8	355-359, 364-366
Squares with > 50% land over 800 ft. not grouped in core regions	-	10	8, 10, 12, 15, 17, 18, 125, 313, 409, 416

Table 7 UPLAND GRID SQUARES FALLING WITHIN NATIONAL PARKS,
IN RELATION TO THE UPLAND REGIONS

National Park	Number of 10 x 10 km grid squares, wholly or partly within the Park	Index Numbers of these Squares and the Upland Regions in which they Occur		
		Index Numbers of Grid Squares	Upland Geographic Regions	Proportion of Upland Region in National Park
Northumberland N.P.	15	1, 2, 4, 5 (4 squares)	Cheviot	80%
		9, 10, 11, 13, 14, 15, 18, 19, 427, 20, 21 (11 squares)	Northern Pennines	23%
Yorkshire Dales N.P.	26	78-80, 90-95, 102-107, 110-114, 118-121, 127, 128	Central Pennines	63%
Peak District N.P.	23	154, 155 (2 squares)	Southern Pennines	8%
		158-160, 161-164, 170-173, 183- 186, 196-199, 212, 213 (21 squares)	Peak District	72%
Lake District N.P.	25	37, 38, 47-51, 57-62, 71-75, 86- 89, 101, 431	Lake District	86%
North York Moors N.P.	14	68-70, 82-85, 96-100, 108, 109	North York Moors	100%
Exmoor N.P.	12	436, 379-382, 386-390, 394, 395	Exmoor-Brendon Hills	80%
Dartmoor N.P.	12	406, 407, 412-415, 420-424, 426	Dartmoor	75%
Snowdonia N.P.	25	191 (1 square)	Hiraethog	13%
		167, 176, 177, 188-191, 203-206, 214-217, 221-224, 228-231, 234, 235 (27 squares)	Snowdonia	89%
Brecon Beacons N.P.	22	355-357, 359 (4 squares)	South Wales Coalfield	24%
		321, 322, 330-337, 342-349	Brecon Mountains	72%
Pembrokeshire Coast N.P.	4	310, 311, 326, 327	Prescelly (Minor Upland Region)	100%

Table 8 - ALTITUDE CLASS DISTRIBUTION - TOTAL AREA OF ALTITUDE CLASSES IN UPLAND REGIONS

Upland Region	Area of 100 km ² grid squares allocated to region	Area in Altitude Class (km ²)			
		> 800 ft O.D. (c. 244 m)	> 1400 ft O.D. (c. 427 m)	> 2000 ft O.D. (c. 610 m)	> 3000 ft O.D. (c. 914 m)
<u>Major Upland Regions</u>					
1 Cheviot	500	284	64	8	0
2 Northern Pennines	4,700	2,536	840	140	0
3 Central Pennines	4,100	2,486	820	68	0
4 Southern Pennines	2,600	1,068	104	0	0
5 Peak District	2,900	1,392	164	8	0
6 Lake District	2,900	1,320	492	148	4
7 North York Moors	1,400	416	4	0	0
8 Shropshire Hills	1,400	308	20	0	0
9 Exmoor-Brendon Hills	1,500	652	48	0	0
10 Dartmoor	1,600	660	192	0	0
11 Snowdonia	2,700	1,540	520	112	8
12 Hiraethog	800	456	32	0	0
13 Clwydian Hills	700	276	24	0	0
14 Berwyn Mountains	1,000	608	236	24	0
15 Cambrian Mountains	4,500	2,182	504	0	0
16 Radnor-Clun Forests	1,900	912	116	0	0
17 Brecon Mountains	2,500	1,412	412	64	0
18 South Wales Coalfield	1,700	720	108	0	0
<u>Minor Upland Regions</u>					
19 Forest of Dean, Malvern and Clent Hills	500	28	0	0	0
20 Cotswold Scarp	900	136	0	0	0
21 Wiltshire Downs	400	28	0	0	0
22 Mendip Hills	400	84	0	0	0
23 Quantock Hills	300	36	0	0	0
24 North Dorset Scarp	300	12	0	0	0
25 Blackdown Hills	400	64	0	0	0
26 Bodmin and St. Austell Moors	600	168	0	0	0
27 Prescelly	400	80	0	0	0
Total Area in Given Altitude Classes in England and Wales	-	19,864	4,700	572	12
Total in English Upland Regions	-	11,678	2,748	372	4
Total in Welsh, Upland Regions	-	8,186	1,952	200	8

1 Regions 8 (an English region), 14, 16 and 17 (Welsh regions) contain some 100 km² grid squares which cross the English-Welsh border. They have been treated as entirely within England and Wales respectively.

Table 9 - ALTITUDE CLASS DISTRIBUTION - TOTAL AREA OF ALTITUDE CLASSES IN UPLAND CORE REGIONS

Upland Region	Area ₂ of 100 km ² grid squares allocated to core region	Area in Altitude Class (km ²)			
		> 800 ft O.D. (c. 244 m)	> 1400 ft O.D. (c. 427 m)	> 2000 ft O.D. (c. 610 m)	> 3000 ft O.D. (c. 914 m)
1 Cheviot	300	244	64	8	0
2 Northern Pennines	2,600	1,744	800	140	0
3 Central Pennines	2,500	2,028	768	64	0
4 Southern Pennines	1,000	748	88	0	0
5 Peak District	1,500	1,164	164	8	0
6 Lake District	1,300	988	424	136	4
7 North York Moors	300	172	0	0	0
8 Shropshire Hills	200	120	16	0	0
9 Exmoor-Brendon Hills	500	424	48	0	0
10 Dartmoor	500	436	176	0	0
11 Snowdonia	1,600	1,224	448	108	8
12 Hiraethog	600	428	32	0	0
13 Clwydian Hills	200	144	12	0	0
14 Berwyn Mountains	700	564	232	24	0
15 Cambrian Mountains	2,100	1,652	488	0	0
16 Radnor-Clun Forests	900	724	116	0	0
17 Brecon Mountains	1,600	1,232	376	64	0
18 South Wales Coalfield	800	564	108	0	0
Area in Given Altitude Class in Upland Core Regions of England and Wales	-	14,600	4,360	552	12
Area in English Upland Core Regions ¹	-	8,068	2,548	356	4
Area in Welsh Upland Core Regions ¹	-	6,532	1,812	196	8

¹ See note 1 to Table 8.

Table 10 - OTHER PHYSIOGRAPHIC CHARACTERISTICS OF UPLAND CORE
REGIONS

Upland Core Region	Relative Assessment of Surface Roughness ¹	Relative Assessment of River Density ²	Number of Freshwater Bodies ³	Proportion in Slope Classes % ⁴		
				0-11°	12-22°	> 22°
1 Cheviot	7	7	41	23	73	3
2 Northern Pennines	2	6	41	66	33	1
3 Central Pennines	3	5	41	57	39	4
4 Southern Pennines	2	3	8	59	41	0
5 Peak District	2	4	2	32	63	5
6 Lake District	5	5	2	28	35	36
7 North York Moors	5	5	0	57	43	0
8 Shropshire Hills	2	5	0	25	65	10
9 Exmoor-Brendon Hills	1	5	41	48	50	2
10 Dartmoor	0	5	41	72	28	0
11 Snowdonia	4	5	3	16	61	23
12 Hiraethog	2	3	1	33	67	0
13 Clwydian Hills	3	4	2	50	45	5
14 Berwyn Mountains	2	7	1	7	80	13
15 Cambrian Mountains	3	7	3	18	69	13
16 Radnor-Clun Forests	3	6	41	17	81	2
17 Brecon Mountains	3	8	1	38	55	7
18 South Wales Coalfield	4	6	1	26	54	20

1 Sum of mean values of attributes 1.7 and 1.8 for core region

2 Sum of mean values of attributes 1.9 and 1.10 for core region

3 Mean of attribute 1.11 for core region

4 Mean values of attributes 1.12, 1.13 and 1.14 for core region

Table 1.1 - AVERAGE ANNUAL RAINFALL DISTRIBUTION IN UPLAND CORE REGIONS

Upland Core Region	Rainfall classes (mean p.a.)					
	610-759 mm (24-30 in)	760-1014 mm (31-40 in)	1015-1524 mm (41-60 in)	1525-2284 mm (61-90 in)	2285-3174 mm (91-125 in)	3175-5079 mm (126-200 in)
1 Cheviot	+	+++	++++			
2 Northern Pennines		+++	+++	++		
3 Central Pennines		+	++++	+++		
4 Southern Pennines		+	++++	+		
5 Peak District		+++	++++	+		
6 Lake District		+	++	+++	+++	+
7 North York Moors		++++	+++			
8 Shropshire Hills		++++				
9 Exmoor-Brendon Hills			+++	++++		
10 Dartmoor			++	++++	+	
11 Snowdonia			+	++++	++	+
12 Hiraethog		++	++++	++		
13 Clwydian Hills		+++	++++			
14 Berwyn Mountains		+	+++	++++		
15 Cambrian Mountains		+	+++	++++	+	
16 Radnor-Clun Forests		+++	++++			
17 Brecon Mountains		+	++++	+++	+	
18 South Wales Coalfields			++	++++	++	

+ 1-10%

++ 11-25%

+++ 26-50%

++++ ≥ 51%

Table 12 - SOME LAND USE CHARACTERISTICS OF UPLAND CORE REGIONS

Upland Core Region	% Agricultural Land under			Mean Livestock Units per 100 acres	Mean Standard Man-Days per 100 acres
	Tillage	Improved Grass	Rough Grazing		
1 Cheviot	32	21	47	20	210
2 Northern Pennines	11	31	58	25	151
3 Central Pennines	5	35	60	27	133
4 Southern Pennines	3	59	38	48	329
5 Peak District	8	58	34	37	323
6 Lake District	10	39	51	33	168
7 North York Moors	46	25	29	30	262
8 Shropshire Hills	27	62	11	47	419
9 Exmoor-Brendon Hills	16	60	24	34	264
10 Dartmoor	14	26	60	24	122
11 Snowdonia	5	25	70	25	148
12 Hiraethog	8	54	38	41	290
13 Clwydian Hills	11	56	33	43	376
14 Bervyn Mountains	14	41	45	36	359
15 Cambrian Mountains	9	45	46	31	230
16 Radnor-Clun Forests	14	55	31	36	220
17 Brecon Mountains	11	55	34	40	325
18 South Wales Coalfield	7	40	53	27	163

Table 13 - AGRICULTURAL LAND CLASSIFICATION CHARACTERISTICS OF
UPLAND CORE REGIONS

Upland Core Region	Agricultural Land Classification Grades				
	Agricultural Land of Grade			Non-Agricultural Uses	
	3	4	5	Urban	Other uses
1 Choviot	1	7	84	0	8
2 Northern Pennines	3	20	71	0	6
3 Central Pennines	2	21	75	0	2
4 Southern Pennines	6	36	43	10	5
5 Peak District	6	42	39	4	9
6 Lake District	2	19	70	1	8
7 North York Moors	4	17	73	0	6
8 Shropshire Hills	20	32	42	0	6
9 Exmoor-Brendon Hills	6	47	39	2	6
10 Dartmoor	8	13	74	1	4
11 Snowdonia	1	17	64	1	18
12 Hiraethog	7	54	25	0	14
13 Clwydian Hills	10	46	34	2	8
14 Berwyn Mountains	5	31	48	1	15
15 Cambrian Mountains	0	23	58	0	19
16 Radnor-Clun Forests	6	56	29	3	9
17 Brecon Mountains	3	29	49	2	17
18 South Wales Coalfield	0	12	44	13	31

TABLE 14

ATTRIBUTES USED FOR CLASSIFICATION OF UPLAND 10 x 10 KM GRIDSQUARES BY INDICATOR SPECIES ANALYSIS

ISA Attribute Number	Attribute	Source Attribute in Complete Data Listing
1	Land >800 ft. O.D. (c. 244 m) occupies $\leq 20\%$ of square	1-1
2	Land >800 ft. O.D. (c. 244 m) occupies 24-48% of square	1-1
3	Land >800 ft. O.D. (c. 244 m) occupies $\geq 52\%$ of square	1-1
4	Land >1,400 ft. O.D. (c. 427 m) present in square	1-2
5	Land >2,000 ft. O.D. (c. 610 m) present in square	1-3
6	Land >3,000 ft. O.D. (c. 914 m) present in square	1-4
7	Lowest mapped point in square, ≤ 200 ft. O.D. (c. 61 m)	1-5
8	Lowest mapped point in square, 201-800 ft. O.D. (c. 61-244 m)	1-5
9	Lowest mapped point in square, >800 ft. O.D. (c. 244 m)	1-5
10	Highest mapped point in square, $\leq 1,200$ ft. O.D. (c. 366 m)	1-6
11	Highest mapped point in square, 1,201-2,000 ft. O.D. (c. 366-610 m)	1-6
12	Highest mapped point in square, >2,000 ft. O.D. (c. 610 m)	1-6
13	Number of major changes of slope direction in two transects across square, 0	1-7 + 1-8
14	Number of major changes of slope direction in two transects across square, 1-4	1-7 + 1-8
15	Number of major changes of slope direction in two transects across square, ≥ 5	1-7 + 1-8
16	Number of rivers cut by two transects across square, ≤ 4	1-9 + 1-10
17	Number of rivers cut by two transects across square, ≥ 5	1-9 + 1-10
18	Reservoirs or lakes present in square	1-11
19	Slope class 0-11° occupies $\leq 40\%$ of square	1-12
20	Slope class 0-11° occupies $\geq 50\%$ of square	1-12
21	Slope class 12-22° occupies $\leq 40\%$ of square	1-13
22	Slope class 12-22° occupies $\geq 50\%$ of square	1-13
23	Slope class $> 22^\circ$ occupies 10-20% of square	1-14
24	Slope class $> 22^\circ$ occupies $\geq 30\%$ of square	1-14

ISA Attribute Number	Attribute	Source Attribute in Complete Data Listing
25	Land in rainfall classes $< 1,015$ mm p.a. occupies 4-48% of square	2-1 + 2-2
26	Land in rainfall classes $< 1,015$ mm p.a. occupies $\geq 52\%$ of square	2-1 + 2-2
27	Land in rainfall classes 1,015-1,524 mm p.a. occupies 4-48% of square	2-3
28	Land in rainfall classes 1,015-1,524 mm p.a. occupies $\geq 52\%$ of square	2-3
29	Land in rainfall classes 1,525-2,284 mm p.a. occupies 4-48% of square	2-4
30	Land in rainfall classes 1,525-2,284 mm p.a. occupies $\geq 52\%$ of square	2-4
31	Land in rainfall classes $\geq 2,285$ mm p.a. occupies 4-48% of square	2-5 + 2-6
32	Land in rainfall classes $\geq 2,285$ mm p.a. occupies $\geq 52\%$ of square	2-5 + 2-6
33	Land in evapotranspiration class M.D. 0mm, present in square	2-7
34	Land in evapotranspiration class M.D. 1-49 mm, present in square	2-8 + 2-9
35	Land in evapotranspiration class M.D. 50-99 mm, present in square	2-10 + 2-11
36	Land in evapotranspiration class M.D. 100-125 mm, present in square	2-12
37	Land in evapotranspiration class M.D. > 125 mm, present in square	2-13 + 2-14
38	Land in accumulated temperature class $< 1,099$ day $^{\circ}\text{C}$ present in square	2-15 + 2-16
39	Land in accumulated temperature class 1,100-1,649 day $^{\circ}\text{C}$ present in square	2-17 + 2-18
40	Land in accumulated temperature class $> 1,650$ day $^{\circ}\text{C}$ present in square	2-19
41	Sunshine hours average ≤ 3.5	2-20
42	Sunshine hours average ≥ 3.75	2-20
43	Areas dominated by Brown Earths present in square	3-1
44	Areas dominated by Rendzinas and Calcareous Soils present in square	3-2
45	Areas dominated by Gley Soils present in square	3-3
46	Areas dominated by Brown Podzolic Soils present in square	3-4
47	Areas dominated by Podzols present in square	3-5
48	Areas dominated by Stagnohumic Gleys present in square	3-6
49	Areas dominated by Peat Soils present in square	3-7
50	Areas dominated by Brown Earths occupy 10-40% of square	3-1
51	Areas dominated by Brown Earths occupy $\geq 50\%$ of square	3-1

ISA Attribute Number	Attribute	Source Attribute in Complete Data Listing
52	Number of settlements in square ≤ 3	4-1 + 4-2 + 4-3
53	Number of settlements in square 4-8	4-1 + 4-2 + 4-3
54	Number of settlements in square ≥ 9	4-1 + 4-2 + 4-3
55	Number of roads cut by two transects across square ≤ 6	4-4 + 4-5 + 4-6+4-7
56	Number of roads cut by two transects across square 7-11	4-4 + 4-5 + 4-6+4-7
57	Number of roads cut by two transects across square ≥ 12	4-4 + 4-5 + 4-6+4-7
58	Railways present in square	4-8 + 4-9
59	Rough grazing occupies $\leq 10\%$ of agricultural land in square	5-3
60	Rough grazing occupies 11-30% of agricultural land in square	5-3
61	Rough grazing occupies 31-60% of agricultural land in square	5-3
62	Rough grazing occupies $> 60\%$ of agricultural land in square	5-3
63	Urban areas occupy 1-10% of square	5-7
64	Urban areas occupy $\geq 11\%$ of square	5-7

Table 15 - UPLAND CLASSIFICATION ISA 4: OUTLINE OF FACTORS CONTROLLING CLASE ALLOCATION

2-Class	Relatively low ground; low rainfall; high temperatures			Relatively high ground; low evapotranspiration		
	Some moderately high ground; moderately steep slopes; moderate rainfall; high temperatures and sunshine	Low ground; gentle slopes; low rainfall; relatively low sunshine	High ground; moderately steep slopes; high rainfall; low evapotranspiration	Moderately high ground; gentle slopes; moderately high to high rainfall		
4-Class	Moderately high ground; moderately steep slopes; low rainfall; high evapotranspiration	Very low altitudes present; high evapotranspiration; high temperatures; high sunshine; Brown Earth soils present	Low altitudes present; rivers frequent; moderate evapotranspiration; low sunshine	Moderately high ground; gentle slopes; moderately high to high rainfall	Moderately steep slopes; low rainfall; much Brown Earth soils	Gentle slopes; moderate rainfall; Peaty soils
	1	3	4	5	6	7
8-Class	2					6

Table 16 - CLASS NAMES APPLICABLE TO UPLAND CLASSES IN THE
NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION (ISA 4)

First Division	Second Division	Third Division
2-class level	4-class level	8-class level
Upland	Marginal Upland	Midland Marginal Upland
		1 Southern and Western Marginal Upland
		2 Southwestern Marginal Upland
		3 Southern Marginal Upland
	Core Upland	4 Northern and Eastern Marginal Upland
		5 Northeastern Marginal Upland
		6 Montane Upland
		7 Western High Upland
		8 Western High Upland
		9 Midland High Upland
		10 Eastern High Upland
		11 Northern High Upland
		12

Table 17 - ALTITUDE CLASS DISTRIBUTION - TOTAL AREA AND PERCENTAGE OF ALTITUDE CLASSES IN THE NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 4, 8-Class Level	Number of 100 km ² grid squares in class	Area in Altitude Classes in km ² (as % of total area of upland class)			
		> 800 ft. O.D.	> 1400 ft. O.D.	> 2000 ft. O.D.	> 3000 ft. O.D.
1	37	1,024 (28)	48 (1)	0	0
2	58	956 (16)	24 (<0.5)	0	0
3	38	324 (9)	0	0	0
4	67	1,360 (20)	20 (<0.3)	0	0
5	32	2,432 (76)	1,072 (34)	280 (9)	12 (<0.5)
6	69	5,008 (73)	1,840 (27)	212 (3)	0
7	45	3,158 (70)	460 (10)	8 (<0.5)	0
8	90	5,602 (63)	1,236 (14)	72 (1)	0

Table 18 - OTHER PHYSIOGRAPHIC CHARACTERISTICS OF UPLAND CLASSES IN THE NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 4, 8-Class Level	Relative Assessment of Surface Roughness	Relative Assessment of River Density	Number of Freshwater Bodies	Proportion in Slope Classes (%)		
				0-11°	12°-22°	> 22°
1	2	5	<0.5	40	56	4
2	1	5	<0.5	63	35	2
3	1	4	1	79	21	0
4	1	6	1	77	23	0
5	5	5	2	14	54	32
6	3	6	2	26	63	11
7	2	5	1	28	68	4
8	2	5	2	72	27	1

Sources .

: Data for these and other columns as given in Table 10

Table 19 - AVERAGE ANNUAL RAINFALL DISTRIBUTION IN UPLAND CLASSES
IN THE NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 4, 8-Class Level	Rainfall class (mean p.a.) (as % cover in class)					
	610-759 mm	760-1014 mm	1015-1524 mm	1525-2284 mm	2285-3174 mm	3175-5079 mm
1	9	61	24	6	0	0
2	0	5	80	15	0	0
3	21	73	6	0	0	0
4	10	74	15	1	0	0
5	0	1	30	41	22	6
6	0	1	18	74	7	0
7	0	18	78	4	0	0
8	0	22	58	19	1	0

Table 20 - SOME LAND USE CHARACTERISTICS OF UPLAND CLASSES IN THE
NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 4, 8-Class Level	Agricultural Land under			Mean Livestock Units per 100 acres	Mean Standard Man-Days per 100 acres
	Tillage	Improved Grass	Rough Grazing		
1	20	59	21	40	386
2	12	62	26	42	355
3	31	60	9	43	486
4	18	48	36	37	325
5	8	36	56	30	190
6	8	41	51	31	205
7	9	54	37	37	271
8	10	41	48	33	229

Table 21 - ~~Some Agricultural Land Classification Characteristics~~
 OF UPLAND CLASSES IN THE NATURAL ENVIRONMENTAL UPLAND
 CLASSIFICATION

Upland Classes ISA 4, 8-Class Level	Agricultural Land of Grade				Non-Agricultural Uses	
	2	3	4	5	Urban	Other Uses
1	80	33	32	12	4	12
2	1	29	42	15	3	10
3	14*	51	13	3	8	11
4	1	28	35	17	9	10
5	0	1	18	69	1	11
6	0	1	21	61	1	16
7	0	5	48	34	2	10
8	0	8	26	54	3	9

* <2% Grade 1 land included

Table 2D-- GENERAL CHARACTERISTICS OF CLASSES AT THE 8-CLASS LEVEL IN THE NATURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Class	Dominant range in given characteristic								
	Altitude	Relief	Slopes	Rainfall	Soil	Land Use	Agricultural Land Classes	Settlement Density	
1 Midland Marginal Upland	low	moderate	moderate	low	Brown Earth	improved grass and tillage	3 and 4	relatively high	
2 Southwestern Marginal Upland	low	low	gentle	moderate	Brown Earth	improved grass	3 and 4	relatively high	
3 Southern Marginal Upland	very low	low	gentle	low	Brown Earth and Calcareous Soils	improved grass and tillage	2 and 3	relatively high	
4 Northeastern Marginal Upland	low	low	gentle	low	Gley, Brown Earth and Peaty Gley	improved grass and rough grazing	3 and 4	relatively high	
5 Montane Upland	very high	very strong	very steep	very high	Podzol, Brown Earth and Peaty Gley	rough grazing and improved grass	5	low	
6 Western High Upland	high	strong	steep	high	Brown Earth, Podzol, Peaty Gley and Peat	improved grass and rough grazing	5	low	
7 Midland High Upland	moderately high	moderate	steep	moderate	Brown Earth, Gley and Peaty Gley	improved grass and rough grazing	4 and 5	moderate	
8 Northern High Upland	moderately high	moderate	gentle	moderate	Peaty Gley, Gley, Brown Earth and Podzol	rough grazing and improved grass	5	moderate	

Table 23 - UPLAND CLASSIFICATION ISL 1: OUTLINE OF FACTORS CONTROLLING CLASS ALLOCATION

	Relatively low ground; high temperatures; many settlements and roads				Relatively high ground; low evapotranspiration			
	1	2	3	4	5	6	7	8
2-Class	Relatively low ground; high temperatures; many settlements and roads Moderately high ground present; moderate relief; moderately steep slopes; moderate rainfall; frequent settlements				High ground; high rainfall; low evapotranspiration; Podzol soils; few settlements and roads			
4-Class	Low relief; moderate rainfall; low evapotranspiration	Moderate relief; low rainfall; high evapotranspiration	Moderate evapotranspiration; low sunshine; much rough grazing; some urban	Moderate rainfall; high accumulated temperatures; high sunshine; Brown Earths frequent; little rough grazing	Very low ground present; high accumulated temperatures; Brown Earths and Podzols present	Gentle slopes; moderate rainfall; Peaty clays and Peat soils present; few settlements	Moderately steep slopes; moderate rainfall; Brown Earths present; some urban	Gentle slopes; low rainfall
		2	3	4	5	6	7	8
8-Class								

Table 24 - PROVISIONAL CLASS NAMES APPLICABLE TO UPLAND CLASSES
IN THE NATURAL AND CULTURAL ENVIRONMENTAL UPLAND
CLASSIFICATION (ISA 1)

First Division	Second Division	Third Division
2-Class Level	4-Class Level	8-Class Level
Marginal Upland (Moderately and Heavily Settled)	Moderately Settled Marginal Upland	Western Moderately Settled Marginal Upland 1
	1	Midland Moderately Settled Marginal Upland 2
	Heavily Settled Marginal Upland	Northern Heavily Settled Marginal Upland 3
	2	Southern Heavily Settled Marginal Upland 4
Upland		
Core Upland (Lightly and Moderately Settled)	Lightly Settled High Upland	Lightly Settled High Upland (a) 5
	3	Lightly Settled High Upland (b) 6
	Moderately Settled High Upland	Midland Moderately Settled High Upland 7
	4	Northern Moderately Settled High Upland 8

Table 25 - ALTITUDE CLASS DISTRIBUTION - TOTAL AREA AND PERCENTAGE OF ALTITUDE CLASSES IN THE NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 1, 8-Class Level	Number of 100 km ² grid squares in Class	Area in Altitude Class in km ² (as % of total area of class)			
		>800 ft. O.D.	>1400 ft. O.D.	>2000 ft. O.D.	>3000 ft. O.D.
1	38	784 (21)	28 (1)	0	0
2	40	932 (23)	36 (1)	0	0
3	52	860 (17)	4 (<0.5)	0	0
4	65	752 (12)	4 (<0.5)	0	0
5	61	4,128 (68)	1,420 (23)	164 (3)	8 (<0.5)
6	54	4,684 (87)	2,080 (39)	388 (7)	4 (<0.5)
7	60	3,890 (65)	476 (8)	8 (<0.5)	0
8	66	3,834 (58)	652 (10)	12 (<0.5)	0

Table 26 - OTHER PHYSIOGRAPHIC CHARACTERISTICS OF UPLAND CLASSES IN THE NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 1, 8-Class Level	Relative Assessment of Surface Roughness ¹	Relative Assessment of River Density	Number of Freshwater Bodies	Proportion in Slope Classes (%)		
				0-11°	12-22°	>22°
1	1	6	1	61	37	2
2	2	5	1	47	50	3
3	1	5	1	78	22	0
4	1	5	<0.5	72	27	1
5	3	6	2	21	58	21
6	4	6	1	39	51	10
7	2	5	2	34	62	4
8	2	5	2	74	25	1

¹ Data sources for this and other columns are given in Table 10.

TABLE 22 - RELATIVE CLASSIFICATION OF VITRINE CLASSES IN THE NATURAL AND CULTURAL ENVIRONMENTAL UNIT

Relative Class	Relative Class	Relative Class	Relative Class	Relative Class	Relative Class
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96
97	98	99	100	101	102

TABLE 23 - RELATIVE CLASSIFICATION OF VITRINE CLASSES IN THE NATURAL AND CULTURAL ENVIRONMENTAL UNIT

Relative Class	Relative Class	Relative Class	Relative Class	Relative Class	Relative Class
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96
97	98	99	100	101	102

Table 27 - AVERAGE ANNUAL RAINFALL DISTRIBUTION IN UPLAND CLASSES
IN THE NATURAL AND CULTURAL ENVIRONMENTAL UPLAND
CLASSIFICATION

Upland Classes ISA 1, 8-Class Level	Rainfall Classes (mean p.a.) (as % cover in class)					
	610-759 mm	760-1014 mm	1015-1524 mm	1525-2284 mm	2285-3174 mm	3175-5079 mm
1	0	3	77	20	0	0
2	5	49	40	6	0	0
3	12	71	15	2	0	0
4	15	59	25	1	0	0
5	0	1	14	72	10	3
6	0	6	42	42	9	1
7	0	14	72	13	1	0
8	0	36	50	14	0	0

Table 28 - SOME LAND USE CHARACTERISTICS OF UPLAND CLASSES IN THE
NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 1, 8-Class Level	% Agricultural Land Under			Mean Livestock Units per 100 acres	Mean Standard Man-Days per 100 acres
	Tillage	Improved Grass	Rough Grazing		
1	11	59	30	40	317
2	13	55	32	38	320
3	19	49	32	40	361
4	26	65	9	44	482
5	8	38	54	30	197
6	9	36	55	28	179
7	8	52	40	37	261
8	12	42	46	33	243

Table 29 -- SOME AGRICULTURAL LAND CLASSIFICATION CHARACTERISTICS
OF UPLAND CLASSES IN THE NATURAL AND CULTURAL
ENVIRONMENTAL UPLAND CLASSIFICATION

Upland Classes ISA 1, 8-Class Level	% Agricultural Land of Grade				Non-Agricultural Uses	
	2	3	4	5	Urban	Other Uses
1	1	23	41	20	4	11
2	3	21	42	17	6	11
3	1	34	34	11	11	9
4	12*	50	20	4	4	10
5	0	2	18	62	1	17
6	0	2	15	72	(<0.5)	11
7	0	6	48	33	3	10
8	0	8	28	52	2	10

* <2% Grade 1 land included.

Table 30 - GENERAL CHARACTERISTICS OF CLASSES AT THE 8-CLASS LEVEL IN THE NATURAL AND CULTURAL ENVIRONMENTAL UPLAND CLASSIFICATION

Class Number and Provisional Name	Dominant Range in given characteristic							
	Altitude	Relief	Slopes	Rainfall	Soil	Land Use	Agricultural Land Classes	Settlement Density
1 Western Moderately Settled Marginal Upland	low	low	gentle	moderate	Brown Earth	Improved Grass and Rough Grazing	3 and 4	Moderately high
2 Midland Moderately Settled Marginal Upland	low	moderate	moderate	low	Brown Earth and Gley	Improved Grass and Rough Grazing	3 and 4	Moderately high
3 Northern Heavily Settled Marginal Upland	low	low	gentle	low	Gley and Brown Earth	Improved Grass, Rough Grazing and Tillage	3 and 4	Relatively high
4 Southern Heavily Settled Marginal Upland	very low	low	gentle	low	Brown Earth and Calcareous Soils	Improved Grass and Tillage	2 and 3	Relatively high
5 Lightly Settled High Upland (a)	high	strong	very steep	high	Podzol and Brown Earth	Rough Grazing and Improved Grass	5	Low
6 Lightly Settled High Upland (b)	very high	strong	steep	high	Peaty Gley, Peat Podzol and Brown Earth	Rough Grazing and Improved Grass	5	Very low
7 Midland Moderately Settled High Upland	moderately high	moderate	steep	moderate	Brown Earth, Peaty Gley and Gley	Improved Grass and Rough Grazing	4 and 5	Moderately high
8 Northern Moderately Settled High Upland	moderately high	moderate	gentle	low	Peaty Gley, Gley and Brown Earth	Rough Grazing and Improved Grass	5	Moderately high

Table 31 - RELATIONSHIP OF UPLAND I.S.A. CLASSIFICATION CLASSES
TO CORE UPLAND REGIONS

(a) ISA 4 - 8 Classes - Natural Environmental Classification

		ISA 4 - 8 Classes. Number of grid squares in each ISA class, in core regions							
		1	2	3	4	5	6	7	8
CORE REGIONS	1					1	1		1
	2				1	2	3	1	13
	3				1	3	7	1	13
	4							4	6
	5				1	2		10	2
	6					6	4		3
	7								3
	8	2							
	9	1					3		1
	10						1		4
	11					7	8	1	
	12						1	3	2
	13				1			1	
	14	1				2	4		
	15					1	14	5	1
	16						1	7	1
	17					3	5	6	2
	18					1	4	1	2
Number of core region grid squares in ISA class		4	0	0	4	28	56	40	54
Total grid squares in ISA class		37	58	39	67	32	69	45	89
Percentage of ISA class within core upland regions		11	0	0	6	88	81	89	61
Additional 10 core squares not allocated to core regions (% of class)		0	2 (3%)	0	0	0	1 (2%)	0	7 (8%)

(b) ISA 1 - 8 Classes - Natural and Cultural Environmental Classification

		ISA 1 - 8 Classes. Number of grid squares in each ISA class, in core regions							
		1	2	3	4	5	6	7	8
CORE REGIONS	1					1	2		
	2						8	1	11
	3					2	11	2	10
	4						1	6	3
	5			1			2	10	2
	6					7	4	1	1
	7								3
	8		1					1	
	9		1			2		1	1
	10					3	1		1
	11					10	5	1	
	12					1		4	1
	13			1				1	
	14		1			4	1	1	
	15					14	4	3	
	16						1	7	1
	17					2	6	6	2
	18					3		3	2
Number of core region grid squares in ISA class		0	3	2	0	49	46	48	38
Total grid squares in ISA class		38	40	52	65	61	54	60	66
Percentage of ISA class within core upland regions		0	8	4	0	80	85	80	58
Additional 10 core squares not allocated to core regions (% of class)		2 (5%)	0	0	0	0	6 (11%)	0	2 (3%)